

THE
BIRDS
OF
AUSTRALIA

BY
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AND THE BRITISH ORNITHOLOGISTS' UNION
CORRESPONDING FELLOW OF THE AMERICAN ORNITHOLOGISTS' UNION

WITH HAND-COLOURED PLATES

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PREFACE.

IN bringing this volume to an end, we are now starting on the last stage of the work, that is to say, that the next volume will end the series.

This volume contains 145 figures, the greatest number so far, and 609 pages. It became difficult to know where to divide the Honey-eaters. I should have preferred them all in one volume, but this would have made it too cumbersome, so I decided that the genus *Stomiopera* should end it.

Again, I wish to thank all those who have helped me by their contributions. It is only with the assistance of the Field Naturalists that the life history of any bird can be completed.

GREGORY M. MATHEWS.

FOULIS COURT, FAIR OAKS, HANTS.

December 1st, 1924.

ERRATA.

- p. 228, line 2 from bottom, for *Nesopardalotus quadraginthus quadraginthus* read *Nesopardalotus quadraginthus rex*.
- p. 274, line 27, for *palliceps* read *pallidiceps*.
- p. 337, line 2 from bottom, for *Acnathorhynchus* read *Acanthorhynchus*.
- p. 403, line 3, for *pyhrygius* read *phrygius*.
- p. 415, line 5, for *superciliosis* read *superciliosus*.
- p. 451, line 29, for *Meilphaga* read *Meliphaga*.

FAMILY—FALCUNCULIDÆ.

GENUS—FALCUNCULUS.

FALCUNCULUS Vieillot, Analyse nouv. Ornith.,
p. 40, April 14th, 1816. Type (by monotypy) .. *Lanius frontatus* Latham.

As the relatives of this group are entirely unknown at present, but may be the Pachycephalids, I have constituted a family for them.

The head is crested, the bill short, stout, very strongly laterally compressed and tip hooked, medium wings, long square tail with very short legs and stout feet.

The bill is very strongly laterally compressed, very deep at the base, culmen strongly arched, tip sharply hooked with a strong posterior notch and a slight succeeding sinuation, then edge straight, the culmen ridge keeled, depth of upper mandible alone equal to breadth of bill at base; the under mandible very stout, nearly as deep as upper; small triangular interramal feathered space only about one-third the mandible, the gonys keeled and strongly ascending to the notched and hooked tip; the bill is shorter than the head; the nostrils show as ovals in a depression, scarcely a groove, and there is no operculum; a projecting bunch of feathers hide the nostrils and two or three nasal bristles are present; rictal bristles obsolete and few. The immature bill shows the nostrils placed in a groove with a horny operculum.

The wing is rounded, the third, fourth, fifth, and sixth forming the tip, the third longer than the sixth, but shorter than the fifth, which is subequal with the fourth and longest; the second is less than the eighth primary but longer than the secondaries; the first primary short, less than half the length of the second. The tail is long and straight.

The legs are short and stout; strongly scutellate in front with four scutes, bilaminate posteriorly, but this is a false bilamination as seen in many other similar Australian forms, the outer side plate being composed of scutes which fuse, and these are obsoletely seen in many specimens in this genus, six scutes being counted. The toes are long and stout, the hind-toe longest, equal to the middle toe but stouter with a longer claw, the inner and outer toes are subequal with claws each exceeding middle toe alone; claws sharp and slender.

Key to the species.

Lower abdomen and vent white	<i>F. leucogaster.</i>
Lower abdomen and vent yellow	<i>F. frontatus.</i>

Order PASSERIFORMES.

No. 602.

Family FALCUNCULIDÆ.

FALCUNCULUS FRONTATUS.

YELLOW-BELLIED SHRIKE-TIT.

(PLATE 491.)

LANIUS FRONTATUS Latham, Index Ornith. Suppl., p. xviii., after May, 1801: New South Wales.

Lanius frontatus Latham, Index Ornith. Suppl., p. xviii., 1801.

Frontal Shrike, Latham, Gen. Synops. Birds, Suppl. II., p. 75, pl. CXXII., 1801.

*Falcunculus frontatus** Vieillot, Analyse nouv. Ornith., p. 40, 1816; Gould, Birds Austr., pt. v. (Vol. II., pl. 79), Dec. 1st, 1841; *id.*, Handb. Birds Austr., Vol. I., p. 228, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 181, 1878; Gadow, Cat. Birds Brit. Mus., Vol. VIII., p. 173, 1883; Ramsay, Tab. List Austr. Birds, p. 5, 1888; Hall, Key Birds Austr., p. 32, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., 308, 1901; A. G. Campbell, Emu, Vol. IV., p. 112, 1905 (Vic.); North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 36, 1906; Batey, Emu, Vol. VII., p. 8, 1907 (Vic.); Mathews, Handl. Birds Austral., p. 84, 1908; Cleland, Emu, Vol. IX., p. 223, 1910 (Food); Broadbent, *ib.*, Vol. X., p. 236 (N.Q.); Mattingley, *ib.*, Vol. XIV., p. 63, 1914 (Vic.); Cheney, *ib.*, p. 208, 1915 (Vic.); Ramsay, *ib.*, Vol. XV., p. 48, pl. on p. 49, 1915 (N.S.W.); Chisholm, *ib.*, p. 78, 1915 (Vic.); Ashby, *ib.*, Vol. XVI., p. 233, 1917 (S.A.); Campbell and Barnard, *ib.*, Vol. XVII., p. 23, 1917 (N.Q.); Le Souëf and Macpherson, *ib.*, Vol. XX., p. 86, 1920 (N.S.W.).

Falcunculus flavigulus Gould, Synops. Birds Austr., pt. iv., App., p. 2, April 1838: "Australia" = New South Wales; *id.*, Proc. Zool. Soc. (Lond.), 1837, p. 144, Dec. 1838; Mathews, Emu, Vol. XI., p. 105, 1911; Witmer Stone, Austral Av. Rec., Vol. I., pts. 6-7, p. 169, 1913.

Falcunculus gouldi Bonaparte, Consp. Gen. Av., Vol. I., p. 365, 1850 (before Feb. 1851), ex Cabanis MS.: "ex Austr. m. or" = New South Wales; Cabanis, Mus. Heine, Vol. I., p. 66 (after Oct. 23rd), 1851.

Falcunculus whitei Campbell, Emu, Vol. X., pt. 3, p. 167, Dec. 1st, 1910: Napier Broome Bay, North-west Australia; Hill, *ib.*, p. 281; Barnard, *ib.*, Vol. XIV., p. 47, 1914 (N.T.); H. L. White, *ib.*, p. 58.

Falcunculus frontatus frontatus Mathews, Emu, Vol. XI., p. 105, 1911; *id.*, Nov. Zool., Vol. XVIII., p. 375, 1912; *id.*, List Birds Austr., p. 244, 1913.

* Sometimes mis-spelt *frontalis*.



H. Grönvold, del.

Witherby & Co.

FALCUNCULUS LEUCOGASTER.
(WHITE-BELLIED SHRIKE-TIT)
FALCUNCULUS FRONTATUS.
(SHRIKE-TIT).

YELLOW-BELLIED SHRIKE-TIT.

Falcunculus frontatus whitei Mathews, Emu, Vol. XI., p. 105, pl. D, 1911; *id.*, Nov. Zool., Vol. XVIII., p. 376, 1912; *id.*, List Birds Austr., p. 245, 1913.

Falcunculus frontatus gouldi Mathews, Nov. Zool., Vol. XVIII., p. 376, 1912.

Falcunculus frontatus herbertoni Mathews; *ib.*, Jan. 31st, 1912: Herberton, Queensland; *id.*, List Birds Austr., p. 245, 1913.

Falcunculus frontatus iredalei Mathews, Austral Av. Rec., Vol. I., pt. 2, p. 47, April 2nd, 1912: Ringwood, Victoria.

Falcunculus frontatus lumholtzi Mathews, *ib.*, pt. 5, p. 119, Dec. 24th, 1912: Minnie Downs, Queensland; *id.*, List Birds Austr., p. 245, 1913.

Falcunculus frontatus flavigulus Mathews, *ib.*; Belcher, Birds Geelong, p. 308, 1914.

Falcunculus frontatus territorii Mathews, Bull. Brit. Orn Club, Vol. XXXVI., p. 91, July 7th, 1916: McArthur River, Northern Territory.

DISTRIBUTION. Apparently throughout Australia except in south-west. Exact distribution unascertained. Not Tasmania.

Adult male. Crown of head, upper portion of eyelid, nuchal crest, a narrow line from the gape below the eye which joins the ear-coverts black; forehead, lores, fore- and hind-part of eyelid, and sides of hind-crown white; cheeks also white with black hair-like tips to the feathers; chin and throat black with black hair-like tips to the feathers; back, scapulars, rump, and upper tail-coverts yellowish-green; upper wing-coverts ash-grey tinged with yellowish-green, the greater series, bastard-wing, and primary-coverts blackish fringed with grey or greyish-white; flight-quills hair-brown margined with greyish-white on both webs; middle tail-feathers grey with dark shafts, the lateral ones pale brown fringed with white on both webs—the brown pattern almost entirely fades to white on the outmost feather on each side; breast, abdomen, sides of body, thighs, and under tail-coverts bright yellow like the axillaries; marginal under wing-coverts grey, the remainder white; under-surface of flight-quills greyish-brown margined with white; lower aspect of tail pale greyish-brown tipped with white. Total length 183 mm.; culmen 14, wing 95, tail 82, tarsus 20. Figured. Collected on Minnie Downs, Central Queensland, on the 23rd of August, 1881, and is the type of *F. f. lumholtzi*.

Male. Crown of head and a nuchal crest black, as also a narrow line below the eye widening out behind the latter and extending on to the sides of the neck; lores and base of forehead white as also a broad eyebrow which is continued on to the sides of the nape; cheeks and ear-coverts also white; throat black, tinged with grey on the chin and green on the throat; back, wings and scapulars olive-yellow; bastard-wing and primary-coverts dark brown fringed with olive-yellow; major-coverts, primary and secondary quills dark brown fringed with olive-yellow and whitish on the outer primary-quills, inner webs of quills fringed with white towards the base; tail blackish-brown fringed with yellow on the outer webs, the outer pair of tail-feathers white on the outer webs and at the tips, inner webs pale brown fringed with white near the tips; breast, abdomen, sides of body and under tail-coverts canary-yellow like the axillaries; under wing-coverts silky-white tinged with yellow. Bill black, tomium light horn-colour; iris umber-brown; tarsi flesh-grey. Collected at the Mission Station, Napier Broome Bay, North-west Australia, on the 5th of March, 1910, and is the type of *Falcunculus whitei* Campbell.

Adult male. Crown of head, nape, a portion of the eye, hinder-face, and sides of neck black; base of fore-head, nasal plumes, lores, and sides of face white; back, scapulars, rump, upper tail-coverts, upper wing-coverts, and outer aspect of flight-quills yellowish-green; bastard-wing, primary-coverts, centres of the median

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and greater upper coverts and innermost secondaries blackish-brown; inner-webs of flight-quills similar with whitish margins; tail blackish with yellowish-green fringes and white tips to some of the feathers, the outermost feather on each side much paler and having the outer web entirely white; chin and throat black, many of the feathers on the former have hair-like tips; breast, abdomen, sides of body, axillaries, thighs, and under tail-coverts bright yellow; under wing-coverts white tinged with yellow; under-surface of flight-quills hair-brown with whitish margins; lower aspect of tail blackish-brown with white margins to the feathers. Eyes brown, feet grey, bill black. Total length 156 mm.; culmen 15, wing 85, tail 55, tarsus 21. Collected at Borrooloola, McArthur River, Gulf of Carpentaria, Northern Territory, on the 16th of June, 1913.

Adult female. Crown of head, a portion of the eye-ring and nape black like the narrow line below the eye, which widens out behind the eye and extends to the sides of the neck; sides of crown and sides of nape white like the feathers behind the nostrils, lores, cheeks, and sides of neck; back and scapulars olive-green, becoming paler and inclining to yellowish-green on the rump and upper tail-coverts; outer aspect of wings dark lead-grey with pale grey margins to the feathers; bastard-wing and primary-coverts blackish; inner-webs of flight-quills dark brown margined with white on the basal portion; tail lead-grey with whitish fringes to the feathers, the outermost feathers much paler than the central ones; chin and throat bronze-green, many of the feathers on the former have black hair-like tips; breast, abdomen, axillaries, sides of body, thighs, and under tail-coverts pale yellow; under wing-coverts silky-white; under-surface of flight-quills hair-brown with whitish margins; lower aspect of tail greyish-brown with white shafts. Eyes dull brown, bill black, feet grey. Total length 163 mm.; culmen 13, wing 90, tail 60, tarsus 21. Figured. Collected near Herberton, North Queensland, on the 6th of November, 1910.

Male juvenile. Crown of head and nape black, as is also a line from below the eye on to the sides of the neck; lores and feathers behind the nostrils yellowish; sides of crown and cheeks white; back, scapulars, and upper wing-coverts smoke-brown; bastard-wing and primary coverts blackish, with grey or greenish-grey margins to the feathers; flight-quills blackish-brown edged with white on the outer webs of the primaries and with grey or yellowish-green on the secondaries; rump and upper tail-coverts yellow; tail-feathers blackish fringed with white, the outermost feather almost entirely white; throat, breast, abdomen, sides of body and under tail-coverts canary-yellow; edge of wing below buffy-white; under-surface of flight-quills greyish-brown, lower aspect of tail similar to its upper-surface. Bill dark greyish-green, gape and mouth chrome-orange; eyes brown; feet greyish-blue. Collected at Blackburn, Victoria, on the 5th of December, 1908.

Eggs. Clutch, two to three eggs, oval in shape, ground-colour white, marked with very minute spots of very dark olive, and much paler markings of grey. Surface of shell smooth and rather glossy. A clutch of three measures 21-23 mm. by 17.

Nest. Is a beautiful, deep, cup-shaped structure, composed of strips of bark, completely and neatly matted together with a mass of cobwebs. Lined inside with grass, or very thin strips of bark. Measurements—across over all—generally about 3 inches, depth $3\frac{1}{2}$ to 4 inches. Egg cavity across 2 inches, by 2 to $2\frac{1}{4}$ inches deep. The nest is generally placed near the top of the tallest upright branches of a sapling or tree, a Eucalyptus being frequently selected. Height of nest varies from 20 to 50 feet or more, and as a rule in forest country.

Eggs. In the North-western form the clutch is two, shape round oval; texture of shell, colour and markings similar to those of the southern bird, but size smaller. They measure 20 mm. by 16.

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Nest. Placed in the topmost twigs of a tall, stringy bark (*Eucalyptus*) sapling. It is deep and cup-shaped, constructed of shreds of stringy-bark held together with cobwebs; lined with very fine stringy-bark and grass. Outside measurements: depth, 4 inches; width, 3 inches; inside depth, $1\frac{1}{2}$ inches; width, $1\frac{3}{4}$ inches.

Breeding-season. August to January or February.

THIS very distinct form was described and figured by Latham from the collection of General Davies and was of course immediately recognised.

Vigors and Horsfield included it in their Essay but without any notes, so that Gould's account is the first written, thus: "I had many opportunities of observing this bird, both in New South Wales and South Australia, over both of which countries it is very generally, although not numerously, dispersed. It alike inhabits the thick brushes as well as the trees of the open plains. Its chief food is insects, which are either obtained among the foliage or under the bark of the larger branches and trunks of the tree; in procuring these it displays great dexterity, stripping off the bark in the most determined manner, for which purpose its powerful bill is admirably adapted. It is very animated and sprightly in its actions, and in many of its habits bears a striking resemblance to the Tits, particularly in the manner in which it clings to and climbs among the branches in search of food. While thus employed it frequently erects its crest and assumes many pert and lively positions; no bird of its size with which I am acquainted possesses greater strength in its mandibles, or is capable of inflicting severer wounds, as I experienced on handling one I had previously winged, and which fastened on my hand in the most ferocious manner. As far as I am aware (this bird) is not distinguished by any powers of song, for I only heard it utter a few low piping notes. The stomachs of the specimens I dissected were filled with the larvæ of insects and berries."

Mr. J. W. Mellor has written me: "This bird is by no means plentiful anywhere, being seen only in pairs, or more often only singly, but when its brood is off it may be seen searching about amongst the leaves of the eucalypts, getting insects, grubs, etc., upon which to feed them. In the way of eating insects it is very useful indeed, its strong short thickset bill enabling it to get at many injurious insects that would otherwise be missed by more slender billed birds. I have often heard it in the trees about our estate as it prises off a piece of bark from the tree, making quite a loud snapping sound in pecking away a small portion of the edge of the bark, preparatory to pushing its little thick bill beneath, and forcing the lump off; it is generally behind these presumably secure places that many insect pests rest. I have also seen it tearing open the large tough cocoons that are bound together so well that no other small bird has a chance of getting them open."

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Mr. A. G. Campbell wrote about the same thing: " Builds its nest invariably in topmost twigs of some gum tree or sapling, and narrows in the top edge of the nest so that the sitting bird may have a good purchase in time of storm. The Shrike-Tit is the only bird that has the ability to tear open the tough stick-protected cases of the Lictor case-moth. This case-moth and other of its relations are very plentiful about gum-tree tops. It is chiefly in the winter when the case with its hibernating larva is sealed up to a twig, and when other food is scarce, that the Shrike-Tit adds this to its menu."

Mr. Tom Tregallas also wrote: "Is a very interesting bird and one I regard as one of the 'twelve best birds' to the community. Armed with a very powerful beak it breaks open many of the chrysalis containing cocoons that are found in the bush and that are not molested by birds of gentler beak. It is most pertinacious in its search for food, and may be seen assiduously pecking and hammering away at dead or decaying wood in which insects may be found, and the noise it creates in so doing may be heard for a considerable distance. In the long pendant draperies of shed bark that hang from our eucalypts in autumn many varieties of spiders and beetles take refuge, but they are not safe from the attacks of this bird with its powerful beak. Not only does he eat this variety of food but he partakes largely of fungus and other parasitic growths that infest our orchards and gardens, working all the year through and destroying an immense amount of insect pests. When the young are hatched the parents show a great deal of anxiety at the intrusion of any stranger into their domain, and continually cry out 'Think of it too,' so it sounds. After the season is over they go back to a peculiar whistle when feeding in the tree tops, this whistle alternating with a low chirp from the female. They are not numerous anywhere, rarely more than a pair or two being found in any particular district. I think they should be absolutely protected."

Mr. L. G. Chander's notes read: "Having located a grub in a notch of wood, a bird will attack the spot vigorously and work with untiring energy until it has secured its prey. I have watched them hard at work for over ten minutes; if disturbed they soon return and resume operations. Pieces of hanging bark are tapped and carefully searched for spiders and other insects. They are fond of the Cicada and quickly consume a large specimen bit by bit, rejecting the wings and head."

Mr. F. E. Howe has written: "The 'knock-at-the-door,' 'knock-at-the-door' call of this pretty bird is frequently heard in the timber bordering the creeks. They are also heard to utter a sweet and high-pitched note. Although we have never been fortunate enough to find the nest, we have observed the young at Ringwood about November, and at Ferntree Gully

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well fledged young were being fed as late as January. On October 13th we sat watching a pair of these birds in the top of a sapling and it was amazing to see the number and size of the branchlets that were nipped off. This appears to be done in sheer wantonness and not for the sake of food, although that is obtained in the tree tops. In the summer months they consume great numbers of the cockchafer beetle and the rapidity with which they sever the body from its easing is marvellous."

Captain S. A. White has written me: "The Shrike-Tit is nowhere a common bird, but is generally met with moving about in the timbered country in small family parties of four or five, or else in pairs. They are very useful birds in the forest, for they break open the galls upon the leaves and stems and devour the grubs which cause the swellings. The noise caused by these birds pulling off the bark from the trees when in search of insects can be heard quite a distance away. They have a great habit of swinging their bodies from side to side and calling loudly while doing this; they are nearly always on the move and very restless. Their call has many notes, some very monotonous. The nest is generally placed at the top of a tapering sapling, and at times they strip off all the surrounding leaves, but in my experience this is rarely done. The nest is cup-shaped, deep, composed of cobwebs, fibres, grass and rootlets strongly cemented with cobwebs. Nesting season, Sept., Oct. and Nov."

Mattingley has written: "Recently, the pleasant, self-satisfied two-syllable note of some Yellow-bellied Shrike-Tits directed my attention to a wattle tree, and, on glancing upwards, I observed a pair of these dainty birds busily engaged devouring cotton seab which infested the wattle tree, and was slowly destroying it. The birds worked from the outer twigs, along the branches, inwards to the main trunk of the tree, and cleaned off the scale in a workmanlike manner, uttering as they proceeded along the boughs, notes of pleasure, and raising and lowering their large crests. For two days I observed 'Nature's tree-sprayers' and estimated that the work performed daily by each bird, when compared to that of a man, was worth to the community at least 9d. Approximately, the value of the work performed by each Yellow-bellied Shrike-Tit is £14 per annum to the Commonwealth."

Chisholm contributed a good account of this bird, chiefly dealing with the nesting habits, and from which I quote: "Shrike-Tits are constant to a favourable locality. . . The bird did contribute to the locating of the nest by the utterance, while building, of a melancholy monotone. . . At times this note would be emitted just once, very softly, and again the Tit would become more loquacious, and continuously express satisfaction with the world

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in general, and its mate in particular. . . The average period from the start of the nest to the departure of the young I found to be about six weeks. Building operations are usually completed in little more than a week; incubation takes about 20 days; and the young grow to the flight stage in, roughly, three weeks. When this period is closing, signs of restlessness in the nest may be observed from below. The flapping of little wings shows that the little chicks are eager to be abroad, and a shaking of the nesting tree at once starts them. Then commotion reigns. With crests erect and tails spread wide, the parents flit anxiously about, rapidly uttering a harsh, chiding 'Charr-charr,' and now and again breaking into the piping whistle. Fired with a spirit of emulation, the young birds do their best to swell the medley, and chime in with a 'Ta-ta-ta,' 'Choo-choo-choo.' In colour they are, of course, more subdued than their parents, especially about the throat, where the only darkness is at the base of the feathers. The crest is developed early, and seems to afford its owner unlimited satisfaction. As with the nest building, so with the hatching—the female does the greater part of the work. One pair I observed, however, relieved each other at regular intervals during a hot spell. Each bird would hunt for food for a few minutes. . . Of the utility of Shrike-Tits there can be only one opinion. Unquestionably they are among our most valuable birds. The quantity of insects they eat must be enormous, for no part of a tree—from bole to the uppermost leaves—is unvisited by them. Accordingly they are acrobats of the first order, and, in displaying their resemblance to the true Tits of Europe, they assume some very graceful attitudes. By reason of its bark-hunting proclivities the hammering and tearing sounds at once call attention to a Shrike-Tit's presence in a tree. These birds are sometimes locally known as Bark-Tits, but the name of 'Yellow-Hammer' will not easily be suppressed. In the non-nesting months Shrike-Tits often visit the towns and do great service among the codlin moths in the orchards and various pests in the flower gardens. In 1914 a pair was in the habit of visiting the Maryborough fire-station yard, and the keeper was entertained in watching two Sparrows dancing attention on them as they foraged in some eucalypts. When the strong-billed native birds ripped off bark the Sparrows dashed in to share the feast revealed, and got away again quickly."

Mr. Ashby says: "I have found this species common in the timbered country of South Australia and Victoria, except I did not note it in that part of Gippsland where the big trees grow, ranging from 200 ft. to 300 ft., but it may be there. In the Adelaide Hills my attention has often been first called to the bird by hearing pieces of bark falling to the ground; on looking up I have discovered the bird wrenching off the bark from the red or blue gums

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(*Eucalyptus rostratus* and *leucoxylon*), and quickly seizing the insects that shelter behind these loose pieces of bark. This explains the development of the exceptionally strong beak. I have watched them clearing scale off a small tree and generally working over the twigs of the saplings, but more often it is searching under the bark of larger timber for its food. The crest is erected from time to time and a low whistling note (sometimes mistaken for a boy's whistle) emitted fairly often. As the young keep with their parents for a long time the birds are seen usually in a small flock. I believe the oft repeated low whistle is the call note to keep the birds in touch with one another. Besides this note a whirring or chattering note is very characteristic of the species. Their habit of placing their nest in twigs or higher branches of a rather lofty tree makes their eggs somewhat rare in collections. All the nests I have seen have had numerous twigs surrounding the nest bitten off. This habit certainly gives the sitting bird a less impeded outlook, but also makes the nest more conspicuous to any bird of prey flying overhead. I cannot suggest any reasonable explanation accounting for this peculiar habit, possibly it is a survival of a habit once serving a useful purpose but no longer doing so."

When Campbell described *F. whitei* from Napier Broome Bay, Northwest Australia, Hill published a field note reading: "My first introduction to this species was on 31/12/09, when I saw a pair near the Mission Station. Feeling certain that they were of a new species, I devoted a good deal of time during the next month to watching their movements, but at the outset it was evident that they did not intend nesting, for each time I saw them they were travelling slowly towards the south-east and getting further away from my camp, so I decided to shoot them on the first opportunity—which did not occur until 5/3/10, when I secured both birds. I saw no more until 9/6/10, when I noticed another pair in some lightly timbered country, 11 miles south-east of Napier Broome Bay. This pair appeared to be nesting, but as our party was returning after a long trip on short rations, a brief search only could be made, which failed to reveal the nest. In their habits they closely resemble *F. frontatus*, though they are more difficult to locate on account of their subdued notes. Measurements:

♂	Total length	154,	wing	78,	tarsus	22,	bill	16.5,	tail	62 mm.
♀		155		76		20		15		59

As noted hereafter the male was in immature plumage.

Barnard recorded: "This bird was rare on the McArthur, and only a few pairs were seen. These were always on the dry, stringy-bark ridges, where they were hunting among the dead leaves and dry tree-stems for insects. Two nests were found in the forks of the topmost branches of tall, stringy-

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bark saplings. One nest contained a pair of fresh eggs; the other contained one egg from which the young bird was just emerging, and one addled egg."

This remarkable form was soon recognised, and when Gould first began the study of Australian birds he named as a new species *Falcunculus flavigulus*. Afterward he discarded this without remark.

Not long afterward Cabanis regarded the differences he observed to be specific, and considered that the bird Gould had figured was distinct from Latham's and therefore constituted a new species *F. gouldi*, describing two specimens from Port Phillip. The preceding was synonymised also, and so matters stood until 1910 when Campbell described *Falcunculus whitei*, who wrote: "This very distinct new bird approaches nearest to *F. leucogaster* (Gld.), but differs in having the whole of the under-surface yellow, while in general colouring it is more yellowish than either of the other two known species." I have given Hill's field notes, which are a little misleading as will be seen from the note I wrote in connection with the coloured plate presented in the *Emu*: "The examination of the type of this subspecies has afforded me much pleasure. Unfortunately, this is a young bird, and the features of the subspecies are somewhat obscure. However, it seems certain that this bird differs from the eastern *F. frontatus* in its browner coloration, thereby approaching the western *F. leucogaster*. As Mr. Campbell notes, it seems to have the upper coloration of the latter with the under coloration of the former. The small size is, however, due to immaturity, and I feel convinced the fully adult will more probably equal the other two subspecies. As I treat them trinomially, the three forms will be:

Falcunculus frontatus frontatus (Latham), East Australia.

„ „ *whitei* (Campbell), North-west Australia.

„ „ *leucogaster* (Gould), South-west Australia.

By means of this nomenclature we are enabled at once to recognise the affinities of the three forms. The discovery of this bird is of extreme interest, as before its recognition the western subspecies had been considered so isolated and distinct. Mr. Campbell drew attention to its smaller size, and it would be as well to here draw attention to the bird described by Gould as *Falcunculus flavigulus* in the *Syn. B. Austr.*, part IV., App., p. 2 (1838), from Australia. The chief features were its smaller size:—Wing $3\frac{3}{8}$, tail $2\frac{7}{8}$, tarsus $\frac{3}{4}$. Coloration of the wings brownish-grey, margined with pale brown; tail the same; entire under-surface yellow. Gould later reduced this, doubtfully, as a synonym of *F. frontatus*, querying it as a young bird. I have no specimen here that agrees with this diagnosis, and therefore can only ask Australian ornithologists to solve the problem and fix *F. flavigulus* in its proper place."

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A little later I prepared my "Reference List" and admitted:

Falcunculus frontatus frontatus (Latham).

New South Wales.

Falcunculus frontatus gouldi Cabanis.

Victoria, South Australia.

Falcunculus frontatus herbertoni Mathews.

"Differs from *F. f. frontatus* in its paler coloration above and below, and in its shorter bill. Herberton, North Queensland."

Falcunculus frontatus whitei Campbell.

North-west Australia.

Falcunculus frontatus leucogaster Gould.

West Australia.

I placed *F. flavigulus* with a ? in the synonymy of the first named. Almost immediately a correction became necessary and I wrote: "For this (the Victorian) form I used Cabanis's name of *F. gouldi*, as he proposed that name, and described a bird from Port Phillip, Victoria. I now find that Bonaparte, in the *Consp. Gen. Av.*, Vol. I., p. 365, 1850, had previously introduced it, ex Cabanis's MS. for the bird figured by Gould. As neither Bonaparte's nor Gould's birds are from definite localities and the descriptions are indefinite, the only course now open is to designate New South Wales as the type locality of *Falcunculus gouldi* Bonaparte, and to describe the Victorian form as follows:

Falcunculus frontatus iredalei.

"Differs from *F. f. frontatus* in its darker colour and heavier bill. Ringwood, Victoria."

Another complication almost immediately arose, as when Witmer Stone recorded the Gouldian types in the Philadelphia Museum he selected a female from South Australia as type of *Falcunculus flavigulus*, observing: "Based on the female of *F. frontatus*, as explained later in the Birds of Australia. All the specimens are labelled *frontatus*."

I had just named

Falcunculus frontatus lumholtzi.

"Differs from *F. f. frontatus* in having a much shorter crest, more white in front of, and below the eye, and a much paler coloured tail with larger white tips. (Minnie Downs) Queensland."

and in my 1913 "List" I made a couple of alterations.

With the larger accession of material and study I separated *F. leucogaster* with specific rank, treating it (I think more correctly) as a representative species, not a subspecies. I then accepted Witmer Stone's rendering of *F. flavigulus* and used it for the Victorian and South Australian form in place of my *F. f. iredalei*.

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I have recently added

Falcunculus frontatus territori.

"Differs from *F. f. lumholtzi* Mathews in its smaller size. The tail is blacker, with some of the outer webs fringed with yellow. Male: wing 85 mm., tail 55; in *lumholtzi* the male measures: wing 95 mm., tail 80. McArthur River, Northern Territory."

The recent discovery that Gould's earlier types of Australian birds are certainly *not* in Philadelphia has necessitated a reconsideration of such cases as *F. flavigulus*, and there cannot be any doubt that the bird selected by Witmer Stone is not the type, and that Gould's *F. flavigulus* came from New South Wales, and is a synonym of *F. frontatus* typical.

Chisholm observed: "I have seen any amount of young, and know that all the rest of the adult colours take strength before the darkness of the throat," so that we may safely assume that it was an immature bird that Gould named *F. flavigulus*.

Campbell and Barnard have recently remarked: "We did not observe this bird till we arrived on the Kirrama tableland, where its plaintive whistle was occasionally heard. But a part of its call note was unlike that of its more southern form. In comparing skins, the birds had less wing ($\frac{1}{5}$ inch) and more intensely coloured yellow than the Southern Shrike-Tit. These differences would probably warrant Mathew's subspecific title *herbertoni*."

Ashby has noted: "Both male and female were obtained at the Gorge (apparently south end of Flinders Range, lower north of South Australia). The female is considerably yellower—more a buff-yellow than the greenish-yellow of the more southern form. The male was not so yellow, but of the buff shade similar to the female. Rump of both brighter yellowish-green than in Adelaide specimens."

Order PASSERIFORMES.

No. 603.

Family FALCUNCULIDÆ.

FALCUNCULUS LEUCOGASTER.

WHITE-BELLIED SHRIKE-TIT.

(PLATE 491.)

FALCUNCULUS LEUCOGASTER Gould, Synops. Birds Austr., pt. iv., App., p. 2, April 1st, 1838 : Swan River, West Australia.

Falcunculus leucogaster Gould, Synops. Birds Austr., pt. iv., App., p. 2, April 1st, 1838 ; *id.*, Proc. Zool. Soc. (Lond.), 1837, p. 144, Dec., 1838 ; *id.*, Birds Austr., pt. v. (Vol. II., pl. 80), Dec. 1st, 1841 ; *id.*, Handb. Birds Austr., Vol. I., p. 229, 1865 ; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 181, 1878 ; Gadow, Cat. Birds Brit. Mus., Vol. VIII., p. 174, 1883 ; Ramsay, Tab. List Austr. Birds, p. 5, 1888 ; Hall, Key Birds Austr., p. 32, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 309, 1901 ; Milligan, Emu, Vol. III., pp. 10-18, 1903 ; Hill, *ib.*, p. 106 ; North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 38, 1906 ; Mathews, Handl. Birds Austral., p. 84, 1908 ; Gibson, Emu, Vol. IX., p. 74, 1909 ; Crossman, *ib.*, p. 89 ; Whitlock, *ib.*, Vol. X., p. 315, 1911 ; *id.*, *ib.*, Vol. XI., p. 242, 1912 ; Mathews, List Birds Austr., p. 245, 1913 ; Alexander, Emu, Vol. XX., p. 167, 1921.

Falcunculus frontatus leucogaster Mathews, Emu, Vol. XI., p. 105, 1911 ; *id.*, Nov. Zool., Vol. XVIII., p. 376, 1912.

Falcunculus leucogaster stirlingi Mathews, Austral Av. Rec., Vol. II., pt. 7, p. 133, Jan. 28th, 1915 : Stirling Ranges, West Australia.

DISTRIBUTION. South-west Australia only.

Adult male. Top of head, nape, and hind-neck black like a narrow line below the eye, which spreads out behind the eye and extends on to the sides of the neck ; lores, cheeks, and a broad line on each side of the crown white ; back, scapulars, and outer aspect of wings dull yellowish-green ; bastard-wing, primary-coverts, and flight-quills blackish, narrowly fringed with white on the last ; the feathers on the rump have yellowish-white bases ; upper tail-coverts like the back ; middle tail-feathers similar to the back with a greyish tinge on the inner-webs, the outer ones blackish tipped with white which extends along the outermost feather ; chin and throat black, many of the feathers on the former have hair-like tips ; breast bright yellow like the under tail-coverts ; abdomen and flanks silky-white ; axillaries and under wing-coverts more or less tinged with yellow ; under-surface of flight-quills hair-brown fringed with white on the basal portion. Eyes brown, bill and feet black. Total length 180 mm. ; culmen 16, wing 93, tail 78, tarsus 20. Figured. Collected on Lake Baluish, Stirling Ranges, South-west Australia, on the 8th of October, 1910.

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Adult female. Crown of head, nape, and sides of face, and a line from below the eye and extending on to the sides of the neck black; sides of crown, sides of nape, cheeks, and lores white—some of the feathers on the lores and cheeks have black hair-like tips; back, scapulars, rump, upper tail-coverts, upper wing-coverts, and outer aspect of flight-quills yellowish-green—becoming paler and inclining to white towards the tips of the last; middle tail-feathers similar to the back with a greyish tinge, more especially on the inner webs, the outer ones blackish tipped with white which is extended along the outer web of the outermost feather; bastard-wing and primary-coverts blackish fringed with dark green; inner webs of flight-quills dark brown margined with white; chin dusky-grey with black hair-like tips to the feathers; throat similar to the back; breast bright yellow; abdomen and under tail-coverts silky-white; axillaries and under wing-coverts white tinged with yellow; under-surface of flight-quills dark brown fringed with white; lower aspect of tail hair-brown fringed with white at the tip, paler on the outermost feather which is margined with white on the outer web. Eyes hazel, bill black, feet flesh-grey. Total length 172 mm.; culmen 15, wing 90, tail 77, tarsus 20. Figured. Collected in the Stirling Ranges, South-west Australia, on the 18th of September, 1911.

Eggs. Clutch two to three. A clutch of two is oval in shape, ground-colour white, marked with dark olive and grey, which form a zone at the larger end. Surface of shell smooth and slightly glossy. They measure 24 mm. by 15.

Nest. Similar to that of *F. frontatus*.

GOULD named this species before he went to Australia, but his field notes written by Gilbert are the earliest recorded, thus: "This species is an inhabitant of the western portions of Australia where it represents the *Falcunculus frontatus* of the eastern coast, from which it may be readily distinguished by its white abdomen; it is very generally dispersed over the colony of Swan River, although, like its near ally, it is not to be met with in great abundance. It is usually seen in pairs among the thickly-foliaged trees, particularly such as grow in quiet secluded places, and is a most active little bird, running over the trunks and branches of the trees with the greatest facility, and tearing off the bark in its progress in search of insects; the habits in fact of the present and Frontal Shrike-Tit are so closely similar, that a further description is unnecessary. Its flight is of short duration, and is seldom employed for any other purpose than that of flitting from branch to branch, or from one tree to another. Its note is a series of mournful sounds, the last of which is drawn out to a great length. The stomach is extremely muscular and its food consists principally of coleoptera."

Mr. Tom Carter has written me: "It appears to range through the south-west, and was observed and obtained at Kellerberin in Jan., 1903. No birds of this genus were ever observed by me in either the Gascoyne or North-west Cape districts. Still, it is a species that can easily be overlooked, as the birds usually feed in the upper branches of trees and their presence is most often detected by hearing their plaintive whistling note which may

WHITE-BELLIED SHRIKE-TIT.

be faintly described as 'Poo-oo-pec-e.' Apparently Shortridge did not obtain any specimens when he was collecting in West Australia. They are fairly common in the open timber country about Broome Hill, where they were often seen feeding in the Jam trees (*Acacia acuminata*) and pulling off pieces of the rough thick bark in order to obtain the insects below. They are very active in their movements, and are frequently seen clinging to the under side of a branch or twig. Nests were never discovered, but a brood of quite recently fledged young was seen with parent birds on Dec. 20, 1910. About July 13, 1912, this species was exceptionally numerous and noisy for a few days, as if a number of the birds was passing from another locality. These birds bite severely with their strong beaks if captured. One specimen was obtained with yellow centre of back, in place of green."

Whitlock wrote from the Stirling Rauges: "Another bird mentioned by Mr. Milligan is the White-bellied Shrike-Tit (*F. leucogaster*). The nest of this species was one of the special objects of my quest. I found the species distinctly rare; but it is a difficult bird to find, and, moreover, from its very quiet and unobtrusive manner, liable to be overlooked. In all I do not think I saw more than four pairs. I spent hours in watching them. Generally, they were in the tops of white gums, but once or twice I saw a female in small acacia scrub. I often, at first glance, mistook *Melithreptus whitlocki* for this species. Both birds have the same habit of hanging from the slender twigs of eucalypts, which they search for food. With its powerful beak the Shrike-Tit strips off any loose bark it may find, and under which spiders spin their cocoons. When I observed this habit first I was in hopes the birds were collecting building material; but in all cases the strip of bark was carried to a convenient perch, and there the spider or its eggs was devoured. The call note is a single 'ko' or 'koo' very softly uttered."

A second trip added the following notes: "Though by no means a rare bird, it is a species difficult to observe, owing to its habit of haunting the tops of gum-trees. . . It is a very busy bird, however, and a most voracious feeder. . . It is nearly always the male that calls, and he, too, leads the way from tree to tree in the incessant search for food. Occasionally the male breaks into a little chattering song. . . Until late in the spring the young of the previous year remain in company with their parents; and if the members of the party are haunting low trees it is possible to distinguish them by the feathers of the head being much less glossy, or in places dull, and by the looser development of the crest. The Shrike-Tit is a fearless little bird, and will search for food within a few feet of the observer. Both sexes are indefatigable hunters, searching the foliage and the bark of the various gum-trees. Occasionally I have seen them hunting in acacia scrub for larvæ,

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but have never seen them on the ground. Their attitudes are very pleasing, and infinitely varied. In hanging underneath a limb head downwards they are very like the true Tits (*Paridae*) of Europe. When a caterpillar is found it is always carried in the beak to some convenient perch, and there firmly held down by one foot and devoured piecemeal. Usually the head and tail are nipped off first and rejected. The male shares his food with the female in a very generous manner. Often she follows him about the tree, with quivering wings and a querulous cry, but more often she is busily searching for food on her own account. The quantity of grubs eaten is astonishing, and the search appears to go on the whole day with few intermissions."

Alexander has recently written: "Visitor. There is a specimen of this species in the W.A. Museum which was obtained at Wanneroo. This is the only record for this district."

I have recently distinguished

Falcunculus leucogaster stirlingi.

"Differs from *F. l. leucogaster* in having the black on the throat less extensive. Stirling Ranges, West Australia."

GENUS—OREOICA.

OREOICA Gould, Synops. Birds Austr., pt. IV.,
 App., p. 4, April 1st, 1838. Type (by original
 designation) *Falcunculus gutturalis*
 Vigors and Horsfield.

Also spelt—

Oreica Gould, Ann. Mag. Nat. Hist., Vol. XI., p. 190, note, 1843,
Orocca Blyth, Ibis, 1867, p. 14, note.

LARGER crested Falcunculine (?) birds with long laterally compressed bills, long wings, long square tail, and long legs with small feet.

There is much resemblance in structure between this and the preceding form and they are consequently classed together, but it is questionable whether they are very nearly related.

The bill is long, nearly as long as the head, laterally compressed, the culmen arched, the tip slightly hooked with a faint posterior notch and the edges succeeding straight; culmen keeled; under mandible nearly as strong as the upper, but not so deep; depth of both mandibles at base about equal to breadth; interramal space triangular, feathered nearly half the length of the mandible, the gonys a little flattened, the anteriorly a little upcurved; the nostrils appear as slanting ovals placed in the anterior part of a groove into which a few weak nasal bristles project but do not hide the nostrils; a few weak rectal bristles are present.

The wing is rounded with the secondaries long, equal to the second primary which is shorter than the seventh primary, the third, fourth, fifth and sixth primaries subequal and longest, sometimes the third and fourth a shade the longest; the first short, about two-thirds the length of the second. The tail long and square.

The legs are longish and boldly scuted with five scutes in front, posteriorly bilaminate, the outer side pseudo-scutellate. The feet are similar to those of the preceding genus but more delicate; the hind-toe and claw about equal to the middle toe and claw, the hind-claw longest; the front toes short, the outer longer than the inner and nearly equal to the middle toe, which is scarcely excelled by the inner toe and claw.

Order PASSERIFORMES.

No. 604.

Family FALCUNCULIDÆ.

OREOICA GUTTURALIS.

CRESTED BELL-BIRD.

(PLATE 492.)

FALCUNCULUS GUTTURALIS Vigors and Horsfield, Trans. Linn. Soc. (Lond.), Vol. XV., p. 212, Feb. 17th, 1827 : " Kent Group." = New South Wales.

Turdus cristatus Lewin, Birds New Holland, pl. ix. (Sept. ?), 1808 : New South Wales.

Not *Turdus cristatus* Pennant, Forster Indische Zoel., p. 41, 1781.

Crested Thrush Lewin, Natural History of Birds, N.S.W., pl. ix., 1822.

Falcunculus gutturalis Vigors and Horsfield, Trans. Linn. Soc. (London), Vol. XV., p. 212, 1827.

Oreoica gutturalis Gould, Synops. Birds Austr., pt. iv., App., p. 4, 1838 ; *id.*, Proc. Zool. Soc. (Lond.), 1837, p. 151 ; *id.*, Birds Austr., pt. xii. (Vol. II., pl. 81), Sept. 1st, 1843.

Oreoica cristata Gray, Ann. Mag. Nat. Hist., Vol. XI., p. 190, note, 1843 ; Gould, Handb. Birds Austr., Vol. I., p. 231, 1865 ; Diggles, Ornith., Austr., pt. xi., 1867 ; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 182, 1878 ; Gadow, Cat. Birds Brit. Mus., Vol. VIII., p. 174, 1883 ; Ramsay, Tab. List Austr. Birds, p. 5, 1888 ; Hall, Key Birds Austr., p. 32, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 310, 1901 ; Lyons, Emu, Vol. I., p. 136, 1902 (Central Australia) ; Milligan, *ib.*, Vol. III., pp. 10-18, 1903 (W.A.) ; Carter, *ib.*, p. 91, 1903 (M.W.A.) ; H. E. Hill, *ib.*, p. 106, 1903 (W.A.) ; Milligan, *ib.*, Vol. IV., pp. 7-9, 1904 (W.A.) ; *id.*, *ib.*, p. 153, pl. xi., 1905 (W.A.) ; North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 39, 1906 ; Hill, Emu, Vol. VI., p. 179, 1907 (Vic.) ; Mathews, Handl. Birds Austral., p. 84, 1908 ; Howe, Emu, Vol. VIII., p. 133, 1909 (Vic.) ; Whitlock, *ib.*, p. 182, 1909 (W.A.) ; Gibson, *ib.*, Vol. IX., p. 74, 1909 (W.A.) ; Crossman, *ib.*, p. 89 ; Hall, *ib.*, p. 128, 1910 (S.A.) ; Macgillivray, *ib.*, Vol. X., pp. 90-97, 1910 (N.S.W.) ; Shufeldt, *ib.*, Vol. XI., p. 201, pl. xx. (egg), 1912 ; Cleland, *ib.*, Vol. XII., p. 13, 1912 (Food) ; Wilson, *ib.*, p. 37 (Vic.) ; Stone, *ib.*, p. 116 (Vic.) ; S. A. White, *ib.*, p. 125 (S.A.) ; Hill, *ib.*, pp. 244-258, 1913 (N.T.) ; S. A. White, *ib.*, Vol. XIII., p. 25, 1913 (S.A.) ; *id.*, *ib.*, p. 126, 1914 (S.A.) ; Cheney, *ib.*, Vol. XIV., p. 208, 1915 (Vic.) ; S. A. White, *ib.*, Vol. XV., p. 161, 1916 (S.A.) ; Campbell and Barnard, *ib.*, Vol. XVII., p. 23, 1917 (N.Q.) ; Chisholm, *ib.*, Vol. XVIII., p. 75, 1918 (Vic.) ; S. A. White, *ib.*, p. 132 ; *id.*, *ib.*, p. 198, 1919 (Central Australia) ; Campbell, *ib.*, p. 256 (W.A.) ; Chisholm, *ib.*, p. 295 (Vic.) ; Ashby, *ib.*, Vol. XX., p. 134, 1921 (W.A.) ; Mellor, *ib.*, p. 138 (W.A.) ; Le Souëf, *ib.*, p. 142 (W.A.).

NATIONAL MUSEUM MELBOURNE

Witherby & Co

OREOICA GUTTURALIS.
(CRESTED BELL-BIRD).

H. Gronvold, del



CRESTED BELL-BIRD.

Oreoica cristata cristata Mathews, Nov. Zool., Vol. XVIII., p. 376, 1912; *id.*, List Birds Austr., p. 245, 1913.

Oreoica cristata clelandi Mathews, Nov. Zool., Vol. XVIII., p. 376, Jan. 31st, 1912: Coonalpyn, South Australia; *id.*, List Birds Austr., p. 246, 1913; S. A. White, Emu, Vol. XIV., p. 189, 1915 (Central Australia); *id.*, *ib.*, Vol. XVI., p. 14, 1916 (S.A.).

Oreoica cristata pallescens Mathews, Nov. Zool., Vol. XVIII., p. 377, Jan. 31st, 1912: Alexandra, Northern Territory; *id.*, Austral Av. Rec., Vol. I., p. 61, 1912; *id.*, List Birds Austr., p. 246, 1913.

Oreoica cristata mungi Mathews, Nov. Zool., Vol. XVIII., p. 377, Jan. 31st, 1912: Mungi, North-west Australia; *id.*, List Birds Austr., p. 246, 1913.

Oreoica cristata westralensis Mathews, Nov. Zool., Vol. XVIII., p. 377, Jan. 31st, 1912: Broome Hill, South-west Australia; *id.*, Austral Av. Rec., Vol. I., p. 61, 1912; *id.*, List Birds Austr., p. 246, 1913.

Oreoica cristata lloydi Mathews, Ibis, 1917, p. 608, Oct. 10th: Dirk Hartog's Island, West Australia; Whitlock, Emu, Vol. XX., p. 184, 1921; H. L. White, *ib.*, p. 188.

DISTRIBUTION. Australia generally throughout the interior; never strictly on the coastal forest country. Not Tasmania.

Adult male. Fore-head, lores, fore-part of cheeks, chin, and throat white with black hair-like tips to the feathers; the middle of the crown and elongated crest-feathers black; sides of crown, sides of face, sides of neck, and nape ash-grey; eyelids, a line across the face joining the fore-neck, and upper breast soot-black, the shafts of the feathers on the last are nude at the tips; back, wings, and tail bronze-brown with a wash of grey on the back; rump and upper tail-coverts tinged with cinnamon, the feathers on the outer aspect of the wings have pale margins; sides of breast grey slightly tinged with fawn colour; flanks, thighs, and under tail-coverts fawn colour; axillaries cream-white; under wing-coverts also cream-white tinged with yellow; under-surface of flight-quills glossy brown; lower aspect of tail greyish-brown tinged with greenish-yellow. Eyes orange, bill black, legs and feet dark purple. Total length 220 mm.; culmen 18, wing 110, tail 90, tarsus 28. Figured. Collected at Broome Hill, South-west Australia, on the 1st of July, 1908, and is the type of *O. g. westralensis*.

Adult male. Fore-part of head, lores, fore-part of cheeks, chin and throat white with hair-like tips to the feathers on the chin; fore-part of crown and elongated crest-feathers black with white or grey bases; crown of head, nape, and ear-coverts ash-grey; a line across the face, which joins the upper throat, soot-black like the lower throat and upper breast; back, wings, and tail ochreous-brown, paler on the rump and tinged with cinnamon on the upper tail-coverts; inner-webs of flight-quills light hair-brown with pale margins; tail dark hair-brown; abdomen white; sides of breast, sides of body, thighs, and under tail-coverts pale fawn colour; under wing-coverts similar but paler; axillaries white tinged with yellow; under-surface of flight-quills pale hair-brown tinged with yellow; lower aspect of tail similar to its upper-surface, but paler and tinged with yellow. Eyes orange, feet black, bill dark brown. Total length 190 mm.; culmen 13, wing 103, tail 73, tarsus 24. Figured. Collected on Alexander, Northern Territory, in July 1908.

Adult female. Fore-part of head dusky-brown; crest blackish; hinder-portion of crown, sides of crown, and nape grey with dark tips to some of the feathers on the last;

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back, wings, and tail bronze-brown, rump and upper tail-coverts more or less tinged with cinnamon; flight-quills dark hair-brown on the inner webs with ochreous margins on the secondaries; tail also dark hair-brown; lores inclining to whitish; chin and throat white with dark hair-like tips to some of the feathers; fore-neck, sides of neck, sides of face, and upper breast pale bronze-brown; sides of body similar but much paler; lower breast and abdomen cream-white; flanks, thighs, and under tail-coverts cinnamon; axillaries white tinged with yellow; under wing-coverts pale cinnamon; under-surface of flight-quills glossy hair-brown with a yellowish tinge; lower aspect of tail similar. Eyes brown. Total length 202 mm.; culmen 15, wing 99, tail 70, tarsus 28. Figured. Collected at Castlemaine, Victoria, in October 1896.

Nest. Cup-shaped. Composed of stick, twigs, and bark lined with dried grass, rootlets, etc. Outside measurements $4\frac{1}{2}$ inches by 3 deep, inside 3 by 2.

Eggs. Clutch three to four. White to bluish-white, blotched with sepia to black markings. 27-28 mm. by 22.

Eggs. Clutch two to four, swollen ovals in shape, ground-colour white (possessing a faint tinge of blue in many cases), spotted and blotched with blackish markings, and chiefly confined to the larger end of each egg. Surface of shell fine and smooth and rather glossy. The clutch measures 25-26 mm. by 21.

Nest resembles in many respects that of the common *Colluricincla harmonica*. Rather deep cup-shaped structure, composed of strips of bark and leaves, etc., and lined with dry grass, rootlets. Frequently hairy caterpillars are found in the nest. Often placed near the ground in a mass of upright suckers, or in the thick fork of a tree, or hollow stump. Height of nest varies from 3 feet to 20 feet or more from ground. Dimensions of nest over all, $4\frac{1}{2}$ to $5\frac{1}{2}$ inches, up to 4 inches in depth. The egg cavity measures 3 to $3\frac{1}{2}$ inches across by 2 to $2\frac{1}{2}$ inches deep.

Breeding-season. July to January, but on to March in the north.

THIS is one of the few birds painted by Lewin and his figure is of a female, but he gives the first field-note: "Rocks; frequents barren scrubby places. Has a jerk in its walking motion, at the same time erecting its crest like the cockatoo."

Vigors and Horsfield described as a new species *Falcunculus gutturalis*, observing "is in very indifferent condition," and "was procured at Kent's Group, December, 1803." There has been some confusion here as the bird does not occur on that group.

Gould's notes are very good and are here reproduced: "This very singular bird possesses an extremely wide range of habitat, being dispersed over the whole of the southern portion of Australia from east to west. It has not yet been discovered in Tasmania or in any of the islands in Bass's Straits, neither has the extent of its range northwards been ascertained. It is, I believe, everywhere a stationary species, but although its distribution is so general, it is nowhere very plentiful. From what I observed of it, it appeared to give a decided preference to the naked sterile crowns of hills and open bare glades in the forests, and I should say that its presence is indicative of a poor

CRESTED BELL-BIRD.

and bad land. It resorts much to the ground, over the surface of which it hops with great quickness, often in small companies of from three to six in number. When flushed it flies but a short distance, generally to a large horizontal branch of a neighbouring *Eucalyptus*, along which it passes in a succession of quick hops, similar to those of the Common Sparrow of Europe. It is very animated in many of its actions, particularly the male, whose erected crest and white face, relieved by the beautiful orange colour of the eye, give it a very sprightly appearance. The female, on the other hand, being nearly uniform in colour, having the eye hazel and the crest less developed, is by no means so attractive. I regret much that it is not in my power to convey an idea of the sounds uttered by this bird, for they are singular in the extreme; besides which, it is a perfect ventriloquist, its peculiar, mournful piping whistle appearing to be at a considerable distance, while the bird is perched on a large branch of a neighbouring tree. Gilbert having described to the best of his power the singular note of this species, I give his own words; but no description can convey anything like an accurate idea of it; notes of birds, in fact, are not to be described, they must be heard to be understood. 'The most singular feature,' says Gilbert, 'connected with this bird is, that it is a perfect ventriloquist. At first its note commences in so low a tone that it sounds as if at a considerable distance, and then gradually increases in volume until it appears over the head of the wondering hearer, the bird that utters it being all the while on the dead part of a tree, perhaps not more than a few yards distant; its motionless attitude rendering its discovery very difficult. It has two kinds of song, the most usual of which is a running succession of notes, or two notes repeated together rather slowly, followed by a repetition three times rather quickly, the last note resembling the sound of a bell from its ringing tone; the other song is pretty nearly the same, only that it concludes with a sudden and peculiar fall of two notes.' In its nidification and in many of its actions it offers considerable resemblance to the members of the genus *Colluricincla*. It has a thick muscular gizzard, and its food consists of seeds, grain, coleoptera, and the larvæ of all kinds of insects. In Western Australia it often resorts to newly ploughed land, as it there finds an abundance of grubs and caterpillars, its most favourite food."

Captain S. A. White has written: "This is really a dry country bird, and it is found all over the vast interior and is often a silent solitary bird, so in keeping with the surrounding country. The short clinking note is most remarkably like the sound produced by the tongue of a cattle or camel bell when tied up shortly, and many times I have been deceived by this bird, fully expecting that the camels were being brought into camp. The other call is one of four notes resembling the words 'reap-reap-reap-hook,' a pause

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between the first and second and third but the third and fourth blending; this is a very pleasing and melodious call. They take much of their food upon the ground where they move very rapidly, but at the first sound of alarm they will stand motionless, and their plumage is in such colour harmony with the surroundings that it is difficult to pick them out. They have a great way of throwing their voices and are wonderful ventriloquists, and although I have searched for the bird in the direction I thought the sound came I have discovered it in the opposite direction. The nest is placed in a bush not far from the ground and is a bulky structure of sticks well and neatly lined, and I have never yet found a fresh nest that has not had disabled caterpillars in it."

Mr. J. W. Mellor writes: "I have noted this bird in many situations and in all the mallee scrub country wherever I have been, also in the thickly timbered hills along the Flinders Range, South Australia, but it seems to prefer the more open level bush country where the mallee grows thickly, and its loud call of 'reep-reep-reephook' is often heard in the 'stillness' of the Australian bush and quite relieves the monotony that may here exist. Like the Shrike-Thrush it lives on insects and grubs of all kinds and is a most useful bird. It generally nests from April to October."

Mr. Edwin Ashby states: "This is universally called the Bell-Bird throughout the districts where it is found from the wonderful ringing sound of the last note that terminates the series that forms its song. The song consists of six whistles of which the first five are all in one note, the second and third very short, the sixth very much lower than the others, very soft, with a most pleasing bell-like ring much drawn out. The bird will keep on the upper octave for some time and then abruptly drop an octave or *vice versa*. Its ventriloquial powers are very striking and at first led me many a fruitless chase in every direction save the one the bird occupied."

Mr. Sandland has also written: "Very common bird at Balah, South Australia. The birds are wonderful ventriloquists. . . They always carry a number of caterpillars and put them in their nests."

Mr. Thos. P. Austin has written from Cobbore, New South Wales: "Although I have never seen the Bell-Bird (*Oreoica cristata*) here, I saw them in a clump of box saplings on the edge of the Mudgee Rifle Range, and heard their mournful notes the whole day long while the annual rifles matches were being fired. I also met with them in the Bourke District, where they were very plentiful. Being a ventriloquist it is very difficult to know from which direction their notes come. It is also met with in the Dubbo district, so as it frequents country fifty miles on the south and the west, it appears strange that it does not visit here, where there is plenty of similar country."

CRESTED BELL-BIRD.

G. F. Hill wrote concerning the Ararat District, North-west Victoria :
"Usually found in the thickest scrubs. . . I have watched these birds with a view to finding out whether their rich notes are made by the male birds only, or partly by the males and partly by the females, and I am satisfied that the latter is the case."

Macgillivray has written : "The *Oreoica* is a plump, sprightly little bird, and looks his best, I think, when hopping along the ground with erect crest in search of insects and seed."

Wilson noted : "These quaint birds were met with frequently in all the country (Victorian Mallee) traversed, and their curious caterpillar decorated nests often seen. Where a nest was placed in a tea-tree bush, there were invariably found the remains of three or four previous nests."

Chisholm has recorded : "I chanced upon two nestlings squatting in a nest on a bushy stump. They were altogether uncanny-looking objects. Though almost fully fledged, the tops of their heads and a patch right down their respective backs were quite free of feathers, and instead of the usual wide-eyed stare of inquiry the visitor gets from most young birds, the eyes were tightly closed. Both babes, in fact, might have been quite devoid of life ; but when I touched them lightly there was a decided change of tactics. The eyes remain closed, but the necks were outstretched, the sprouting feathers on the foreheads starting, and the heads waved in exactly the threatening manner of the tails of processional caterpillars."

Mr. Tom Carter has sent me a good note : "The Crested Bell-Bird (Mid-west Aboriginal names Bokkun-bokkun and Panpan-pannella) occurs commonly all through the open country from the North-west Cape to the south-west, but is never seen in the heavy timbered country that prevails from 30 to 90 miles from the coast in the south-west. In the Gascoyne and further north districts, these birds occur down to the coast, because it is open country, which they prefer. About the Gascoyne, the breeding season commences in June if winter rains have fallen, and continues until September. The nests are made of small twigs and lined with grass. They are rather bulky for the size of the birds, and are built in any bush, a few feet from the ground, usually from 3 to 5 feet. The clutch of eggs is two or three. The earliest date at which eggs were found was June 11th, but the birds, like most small species in the mid-west, probably breed after rains at any time of the year. The male bird assists largely in incubation, and, if disturbed from the nest, often hops about in the vicinity, uttering its peculiar song to which the Gascoyne and N.W. Cape natives attribute bad luck. In the beautiful, bright calm winter mornings the songs of these birds can be heard on every side and often call down maledictions from travellers and teamsters, who wish to locate the

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bells of their horses, camels or bullocks, and cannot differentiate one from the other at a distance. The birds have distinct ventriloquial powers. Most of the nests contain a few hairy caterpillars. The birds have a harsh scolding note in addition to their song. Bell-Birds were numerous about Broome Hill, and the breeding-season is an extended one, commencing in July and continuing until January. The usual clutch of eggs is three, but four are not uncommon. The nests are similar to those of the mid-western subspecies, and I found one at a height of eight feet above the ground in the fork of a Jam tree. The female was sitting on two eggs. One nest was found four feet from the ground in the hollow top of the stump of a burnt Sheoak. The hollow was open at the top, but the nest could only be seen from above, as it was surrounded by the dead timber. The *male* bird was sitting on three eggs, and there were three hairy caterpillars with the eggs. Another nest was found built in a similar dead stump on another occasion, and several were found, at various dates, in the luxuriant growth of 'suckers' that spring up around the stump of a ring-barked gum tree, especially white gums. From three to five hairy caterpillars are found in almost every nest. July 30th, 1908: Nest 4 eggs (earliest date). Nov. 25th, 1908: 2 fresh eggs (latest date). Nov. 18th, 1910: 2 fresh eggs. Oct. 8th, 1910: Three incubated eggs. Aug. 29th, 1912: 3 eggs. Sept. 25th, 1912: Two fresh eggs. Jan. 3rd, 1906: Young birds in nest."

Mr. J. P. Rogers has written: "This bird was seen at Golden Gate on the Ord River Road; this is the furthest north I have seen it. It is very common at Tanami, Split Rock and Mount Stubbins, Rock Hole. Split Rock is 125 miles S.E. of Hall's Creek. This town is 255 miles S. of Wyndham. . . . Out in the desert from Mungi I heard these birds calling and found what appeared to be old nests of this species, but I saw none until the 4th of July, when I secured a male and female. Several others were heard, but it is difficult to locate these birds by the call, and the scrub was dense where I found the birds. I have only seen and heard this species on the desert country east of Mungi; none were heard on the low country. Although Mr. Crossman gave the Bell-Birds as noted at Broome, and Mr. Hill at Drysdale River, N.W. Kimberley, this is the first time I have found them in W. Kimberley."

H. E. Hill wrote from Brookton, West Australia: "Heard continually in the granite, but not often seen. Watched one bird singing for a while, and I noticed that as it sang it continually raised and lowered its crest."

Milligan, dealing with a trip to Yandanooka District, West Australia, wrote: "This species was very common everywhere and I was fortunate in finding two nests containing eggs. . . . The occupant of each nest sat very

CRESTED BELL-BIRD.

closely, and did not seem disposed to move on my near approach. Each nest abounded with black hairy caterpillars—a circumstance which has already been observed and recorded by field naturalists in regard to the species. The presence of such life has not hitherto been satisfactorily accounted for, and the suggestion that the caterpillars are placed there by one of the pair as food supplies for the sitting bird has been rejected. I am unable to concur in the rejection. The fact of each bird sitting so closely led me to the conclusion that they could not be there for any purpose other than food. However, subsequently, I shot one of the species (not one of the nesting birds) and had the contents of its stomach preserved for examination on my return. Such examination, with the aid of a strong magnifying glass, revealed the presence of scores of the hairs of the caterpillars, together with the segments of their bodies and softer inner parts. The rich and varied notes of the species are well known to every Australian bushman, as also are its extraordinary ventriloquial powers. The several combinations of notes I fix as seven. Some combinations are inimitable, or at least have not an equivalent in the English language. Some, however, have an equivalent, perhaps fanciful. Three of these I translate as follows: One, ‘Billy Pope,’ thrice repeated; another, ‘Honour the Pope,’ oft repeated; and a third, ‘Where’s Subiāco?’ These birds together with their compeers in song, *Sphenostoma cristatum*, *Cracticus nigrigularis*, *Collyriocincla rufiventris* and *Pachycephala falcata* (which were invariably found in association) made the scrub-lands ring again with their melody. The aborigines call the bird ‘Bāācka Bāācka,’ evidently in imitation of one of their combinations of notes.”

G. F. Hill has observed from Borrooloola: “These birds were found only on the dry, stringy bark (*Eucalyptus*) ridges. A nest, built of bark and leaves and lined with grass, was found in a fork of a small eucalyptus sapling on 6th January; it contained, besides two fresh eggs, about one dozen living larvæ of a moth (*Spilosoma* sp.). It is not uncommon to find the larvæ of *Spilosoma obliqua* in the nests of *Oreoica cristata* in Victoria, but it is somewhat remarkable to find larvæ of a very closely allied species in the nests of the Northern Territory Birds.”

Whitlock has written of the Dirk Hartog form: “Rather local in its haunts, favouring the very largest bushes, especially wanya thickets, where it nested. I observed no difference in its well-known notes or general conduct from mainland birds. I found several nests containing eggs. Both nests and eggs were similar to typical ones. No hairy caterpillars were found in these nests, though a hairy larva resembling that of the European tiger-moth (*Chelonia caja*) simply abounded at the time. Bell-Birds were frequently noted on Peron Peninsula in similar haunts.”

THE BIRDS OF AUSTRALIA.

As previously recorded, Lewin described this bird and named it *Turdus cristatus*. Vigors and Horsfield described it again as *Falcunculus gutturalis*, and then Gould proposed for it the new genus name *Oreoica* and it was figured in his folio work as *Oreoica gutturalis*. However, when G. R. Gray was working at the "Lambert" drawings, he noted that Lewin's name had priority and that this bird should be called *Oreoica cristata*, and this was immediately accepted by Gould, and *Oreoica cristata* was used until a year or two ago, when I noted that prior to Lewin's choice Forster had named a bird *Turdus cristatus*, and consequently we must revert to Vigors and Horsfield's alternative name and the species be known as *Oreoica gutturalis*, the same name as used by Gould eighty years ago.

Although variation had been noticed no study of the species as a whole was undertaken until I prepared my "Reference List," when I found several subspecies easily definable. Thus I arranged

Oreoica cristata cristata (Lewin)

Queensland, New South Wales, Victoria.

Oreoica cristata clelandi Mathews.

"Differs from *O. c. cristata* in having the abdomen snow-white. Coonalpyn, South Australia."

South Australia.

Oreoica cristata pallescens Mathews.

"Differs from *O. c. cristata* in its smaller size and pallid coloration. Alexandra, Northern Territory."

Northern Territory.

Oreoica cristata mungi Mathews.

"Differs from *O. c. pallescens* in being very much paler and in having a rufous-buff rump. Mungi, North-west Australia."

North-west Australia (Interior).

Oreoica cristata westralensis Mathews.

"Differs from *O. c. cristata* in its slightly larger size, lighter and greyer coloration above and below. (Broome Hill) South-west Australia."

West Australia.

No alteration was made in my 1913 "List," but recently has been described

Oreoica cristata lloydi Mathews,

Carter's notes reading "Crested Bell-Birds were not numerous on Dirk Hartog Island, but a few pairs were seen in several localities. The specimens obtained are paler in colour on the back, mantle, and under-parts generally than birds from the Peron and other mainland localities, and also lack the deep ochreous flank-markings of mainland birds."

CRESTED BELL-BIRD.

Campbell has observed: "One ♂ (immature) from Shark Bay where it is numerous. Mr. Carter observed the insular bird of this species on Dirk Hartog Island was altogether paler in colour, and named it *lloydi*. As various kinds of birds inhabiting Kangaroo Island, off South Australia, are darker than those of the mainland generally, so it appears that some species found on Dirk Hartog Island, off the western coast, are much lighter in colour than those represented on the mainland opposite, notably, in addition to the Bell-Bird, the Emu-Wren, Scrub-Wren, Field-Wren, etc."

The names must now read:

Oreoica gutturalis gutturalis (Vigors and Horsfield)

Queensland, New South Wales, Victoria.

Oreoica gutturalis clelandi Mathews

South Australia.

Oreoica gutturalis westralensis Mathews

South-west Australia.

Oreoica gutturalis lloydi Mathews

Dirk Hartog Island, West Australia

Oreoica gutturalis mungi Mathews

North-west Australia (Interior).

Oreoica gutturalis pallescens Mathews

Northern Territory.

FAMILY—SPHENOSTOMIDÆ.

GENUS—APHELOCEPHALA.

APHELOCEPHALA Oberholser, Proc. Acad. Nat. Sci.

Philad., 1899, p. 214, June 2nd. Type (by

original designation) *Xerophila leucopsis* Gould.

Xerophila Gould, Proc. Zool. Soc. (Lond.), 1840,

p. 175, July 1841. Type (by monotypy) .. *Xerophila leucopsis* Gould.

Not—

Held., Isis, 1837, col. 913.

VERY small non-crested birds with short stout conical bills, short tail, short wings, long slender legs and delicate feet.

The bill is short and conical, about half the length of the head, the culmen arched, the tip sharp not hooked, laterally compressed, and with little basal expansion, the culmen semi-keeled; the lower mandible is not so deep as the upper, the gonys more than half the length ascending and the interramal space feathered; the depth of both mandibles at the base more than the breadth; the nostrils are oval apertures in a short nasal groove which is, however, nearly half the length of the culmen; the nostrils are hidden by frontal projecting feathering with two or three nasal bristles; rictal bristles few and delicate.

The wing is short and rounded, the first primary short but more than half the length of the second which is longer than the secondaries and the eighth primary; the third, fourth, fifth and sixth primaries are subequal and longest, the seventh a little shorter but longer than the eighth.

The tail is short, a little rounded, the upper tail-coverts long, more than half the length of the tail.

The legs are comparatively long and slender, booted in front, but sometimes scutes may be obscurely seen, bilaminate behind; the toes are short and delicate, the claws weak; the hind-toe equals the mid-toe, the hind claw longest; the outer and inner toes are subequal, the inner toe and claw equal to the middle toe without claw.

Key to the Species.

No band on chest	..	..	..	..	..	<i>A. leucopsis.</i>
Band on chest						
Black band	..	..	..	..	..	<i>A. nigricincta.</i>
Chestnut band	..	..	..	..	..	<i>A. pectoralis.</i>

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APHELOCEPHALA LEUCOPSIS.
(WHITEFACE).

APHELOCEPHALA LEUCOPSIS.

WHITEFACE.

(PLATE 493.)

XEROPHILA LEUCOPSIS Gould, Proc. Zool. Soc. (Lond.), 1840, p. 175, July 1841 : Adelaide, South Australia.

Xerophila leucopsis Gould, Proc. Zool. Soc. (Lond.), 1840, p. 175, 1841 ; *id.*, Birds Austr., pt. xv. (Vol. III., pl. 67), June 1st, 1844 ; *id.*, Handb. Birds Austr., Vol. I., p. 382, 1865 ; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 186, 1878 ; Gadow, Cat. Birds Brit. Mus., Vol. VIII., p. 73, 1883 ; Ramsay, Tab. List Austr. Birds, p. 9, 1888 ; Hall, Key Birds Austr., p. 30, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 287, 1901 ; A. G. Campbell, Emu, Vol. II., p. 13, 1902 (Vic.) ; H. E. Hill, *ib.*, Vol. VI., p. 179, 1907 (Vic.) ; Stone, *ib.*, Vol. XII., p. 115, 1912 (Vic.) ; S. A. White, *ib.*, p. 125 (S.A.).

Sphenostoma leucopsis Gray, Genera Birds, Vol. I., p. 194, 1847.

Aphelocephala leucopsis Oberholser, Proc. Acad. Nat. Sci. Philad., 1899, p. 214 ; North, Austr. Mus. Spec. Cat. No. 1, Vol. I., p. 291, 1904 ; Mathews, Handl. Birds Austral., p. 87, 1908 ; Hall, Emu, Vol. IX., p. 128, 1910 (S.A.) ; Howe, *ib.*, p. 233 (Vic.) ; Macgillivray, *ib.*, Vol. X., p. 91, 1910 (N.S.W.) ; Cleland, *ib.*, Vol. XI., p. 88, 1911 (Food) ; *id.*, *ib.*, Vol. XII., p. 14, 1912 (Food) ; Wilson, *ib.*, p. 37 (Vic.) ; S. A. White, *ib.*, p. 184, 1913 (S.A.) ; Mellor, Emu, Vol. XII., p. 186, 1913 (S.A.) ; S. A. White, *ib.*, Vol. XIII., p. 30, 1913 (S.A.) ; *id.*, *ib.*, p. 128, 1914 (S.A.) ; *id.*, *ib.*, Vol. XV., p. 161, 1916 (S.A.) ; *id.*, *ib.*, Vol. XVIII., pp. 23-198, 1918-19 (S.A.) ; Le Souëf, *ib.*, Vol. XX., p. 144, 1921 (S.A.) ; Whitlock, *ib.*, Vol. XXI., p. 177, 1922 (W.A.) ; McGilp., *ib.*, Vol. XXII., p. 285, 1913.

Xerophila castaneiventris Milligan, Emu, Vol. III., pt. 2, p. 70, July 1st, 1903 : Day Dawn, Murchison, West Australia ; Campbell, *ib.*, p. 120, 1903 (eggs) ; Milligan, *ib.*, Vol. IV., p. 154, 1905 ; *id.*, *ib.*, p. 185, pl. XIII. ; Gibson, *ib.*, Vol. IX., p. 74, 1909.

Aphelocephala castaneiventris Mathews, Handl. Birds Austral., p. 87, 1908 ; Whitlock, Emu, Vol. IX., p. 207, 1910 ; Hill, *ib.*, Vol. XII., p. 245, 1913.

Aphelocephala leucopsis pallida Mathews, Bull. Brit. Orn. Club, Vol. XXVII., p. 62, March 3rd, 1911 : Leigh's Creek, South Australia ; *id.*, Nov. Zool., Vol. XVIII., p. 377, 1912 ; *id.*, List Birds Austr., p. 246, 1913 ; *id.*, Emu, Vol. XVI., p. 35, 1916.

Aphelocephala leucopsis leucopsis Mathews, Nov. Zool., Vol. XVIII., p. 377, 1912 ; *id.*, List Birds Austr., p. 246, 1913 ; Belcher, Birds Geelong, p. 310, 1914.

THE BIRDS OF AUSTRALIA.

Aphelocephala leucopsis missa Mathews, Nov. Zool., Vol. XVIII., p. 377. Jan. 31st, 1912 : (Narandera) New South Wales ; *id.*, Austral Av. Rec., Vol. I., p. 61, 1912.

Aphelocephala pectoralis castaneiventris Mathews, *ib.*, p. 378 ; *id.*, List Birds Austr., p. 247, 1913.

Aphelocephala castaneiventris whitei Mathews, Austral Av. Rec., Vol. II., pt. 5, p. 100, Sept. 24th, 1914 : Jay Waterhole, MacDonnell Range, Central Australia ; S. A. White, Emu, Vol. XIV., p. 189, 1915 ; *id.*, Trans. Roy. Soc. S.A., Vol. XXXIX., p. 755, 1915 ; H. L. White, Emu, Vol. XV., p. 36, 1915.

Aphelocephala leucopsis castaneiventris Mathews, Emu, Vol. XVI., p. 35, 1916.

Aphelocephala leucopsis whitei Mathews, *ib.*, ; S. A. White, *ib.*, Vol. XXI., p. 94, 1921.

Aphelocephala castaneiventris minilya Mathews, Bull. Brit. Orn. Club, Vol. XL., p. 75, Jan. 30th, 1920 : Minilya River, Mid-west Australia ; Carter, Ibis, 1921, p. 65.

DISTRIBUTION. Extra-tropical Southern Australia from East to West through Central Australia. Not Tasmania.

Adult. General colour of the upper-surface mouse-brown including the top of the head, back, long upper tail-coverts, scapulars and wings, the fore-part of the head somewhat darker than the back with an indication of dark centres to the feathers ; short upper tail-coverts tipped with cinnamon ; flight-quills hair-brown with pale fringes both on the outer and inner webs ; middle tail-feathers dark brown, the outer ones inclining to black on the apical portion, which are tipped with white ; base of fore-head, lores, and fore-part of face white ; hinder-face and sides of neck like the back ; nasal bristles black ; chin white with blackish bases to the feathers some of which have hair-like tips ; breast greyish-white, becoming darker on the sides ; abdomen cream-white ; thighs dusky ; flanks and under tail-coverts chestnut ; axillaries and under wing-coverts white, becoming dusky-brown on the greater series of the latter ; under-surface of flight-quills hair-brown with buffy-white margins ; lower aspect of tail similar to its upper-surface. Eyes pale buff, feet and bill slate-black. Total length 108 mm. ; culmen 7, wing 59, tail 45, tarsus 18. Figured. Collected on Crookedine Lake, Southern Cross, South-west Australia, on the 23rd of July, 1905, and is *castaneiventris* (middle figure). The sexes are alike.

Adult. General colour of the upper-surface sepia-brown, including the top of the head, ear-coverts, sides of neck, hind-neck, back, upper tail-coverts, scapulars, and upper wing-coverts ; bastard-wing also blackish-brown ; flight-quills dark hair-brown with whitish margins ; tail-feathers dark brown, becoming blackish towards the tips which have pale margins ; a dark narrow band across the fore-head from eye to eye ; nasal bristles black ; base of fore-head, lores, chin, throat, fore-neck, breast, abdomen, and under tail-coverts cream-white, some of the feathers on the chin have hair-like tips ; sides of breast greyish ; flanks cinnamon ; thighs dusky ; axillaries and lesser under wing-coverts buffy-white, the greater series inclining to grey ; under-surface of flight-quills glossy hair-brown with cream-white margins ; lower aspect of tail similar to its upper-surface. Eyes creamy-white, feet and bill black. Total length 102 mm. ; culmen 8, wing 58, tail 40, tarsus 19. Figured. Collected on Coongra Creek, Central Australia, on the 4th of July, 1914, and is the connecting link between *leucopsis* and *castaneiventris* (top figure).

Adult female. General colour of the upper-surface rust-brown, including the top of the head, hind-face, sides of neck, hind-neck, back, rump, upper tail-coverts, scapulars, and outer aspect of wings ; bastard-wing blackish-brown narrowly edged with whitish ; inner-webs of flight-quills darker than the back with pale inner margins ; middle tail-feathers dark brown with pale tips, becoming blackish on the lateral

WHITEFACE.

onous which are tipped with white, chiefly on the inner webs; the feathers on the fore-part of the head blackish at the base, which forms a dark narrow line extending on to the eye-ring, which is otherwise whitish; base of fore-head and lores white; rictal-bristles black; the feathers on the chin have hair-like tips; cheeks and throat buffy-white with dark bases to the feathers; middle of breast similar, becoming pale olive-brown on the sides; flanks smoke-brown; abdomen and under tail-coverts cream-colour; axillaries and under wing-coverts similar, tipped with hair-brown; under-surface of flight-quills hair-brown; lower aspect of tail similar to its upper-surface. Total length 115 mm.; culmen 7, wing 63, tail 43, tarsus 18. Figured. Collected on Narandra, New South Wales, in May 1892, and is *leucopsis*.

Immature. Similar to the adult.

Eggs. Three to five eggs form the clutch; but usually four are met with. They are subject to much variation in shape, size, general colouring and markings. A rather typical clutch of five eggs taken at Lake Boga, 205 miles N.W. of Melbourne, Victoria, on the 22nd of October, 1913, is of a very pale pinkish-white ground-colour, well spotted and blotched with markings of reddish-brown and purplish-grey, particularly at the larger end of each egg, where well-defined zones are formed. Rather rounded ovals in shape; surface of shell smooth and rather glossy. 17-18 mm. by 13-14. Another clutch of four eggs, taken at Buckinguy, Marra Creek, New South Wales, on the 6th of September, 1896, is of a pale buff-white ground-colour, finely spotted and speckled all over with very pale reddish-brown and purplish-grey, becoming confluent towards the larger end of each egg. Long ovals in shape; surface of shell smooth and rather glossy. Another clutch of three eggs, taken in the Riverina district, New South Wales, on the 10th of September, 1897, is of a pale pinkish-white ground-colour, spotted and blotched with reddish-brown and purplish-grey, the markings being nearly all confined to a well-defined zone at the larger end of each egg. Very swollen and rounded ovals in shape; surface of shell smooth and rather glossy.

Nest. Domed-shaped or covered over structure, with entrance on side; composed of dry grass, sheep's wool, thin strips of bark, etc., and lined with sheep's wool, thistle-down and feathers, and usually placed near the ground in a small bush, or opening on the side of an old post, tree, or tree-stump; and often as low down as within three or four feet of the ground.

Breeding-months vary according to the wet and dry seasons, but most usual months are July to December.

Eggs. In the form *Aphelocephala leucopsis castaneiventris* three to four eggs form the clutch, and are subject to rather great variation in shape, size, general colouring and markings. A rather typical clutch of four eggs taken at Yalgoo Goldfield, Western Australia, on the 3rd of September, 1903, is of a pinkish-white ground-colour, well spotted and blotched with reddish-brown and purplish-grey, forming a large and dark zone of markings at the larger end of each egg. Swollen ovals in shape; surface of shell smooth and slightly glossy. Another clutch of three eggs, taken at Lake Way, East Murchison, Western Australia, on the 15th of August, 1909, are very much smaller specimens, and are of a rich buff-white ground-colour, minutely speckled all over with pale reddish-brown and purplish-grey. Ovals in shape; surface of shell very smooth and glossy. 16 mm. by 12 mm.

Nest. A loose domed or covered over structure of grass, soft bark, hair, feathers, and other soft material, and warmly lined with feathers; and usually placed in a small cavity in a hollow stump within a few feet of the ground.

Breeding-months. August, September and October.

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THIS species and genus was discovered by Gould, who "first saw it in the streets of Adelaide, where it was hopping about and presenting the appearance of the Sparrow in London."

Gould later wrote : "I found this species tolerably abundant in all parts of the colony of South Australia that I visited, both in the interior and in the neighbourhood of the coast. It was generally met with in small flocks of from six to sixteen in number, and more frequently on the ground than among the trees. It hops over the surface very quickly and appears a busy little bird, prying among the herbage for its food, which principally consists of the seeds of the grasses and small annuals which abound on the plains and low hills of South Australia. In disposition it is so remarkably tame that it will allow of a very near approach before it will rise, and then it merely flies to the nearest bush or low tree. The male offers no external difference by which it can be distinguished from the female, neither do the young exhibit any contrast to the adults in their plumage ; it has in fact little to recommend it to the notice of the general observer either in its colouring or in the quality of its song."

At the present time Captain S. A. White writes : "This was once a common bird on the Adelaide plains but has practically disappeared. It is still to be met with in numbers along the coast line ; from 200 to 300 miles inland a much lighter form takes its place which is distributed all over the interior."

Mr. J. W. Mellor has written me : "The range of this little Titmouse is very great as I have seen it in several of the States, but in South Australia I have had the most opportunity of studying its habits and watching it in its various moods. It loves the more open land, where the trees are not too thick, and here it may be seen hopping over the ground in small lots of ten or a dozen, pecking up the small insects found amongst the short grass ; it is also seen in small bushy trees and shrubs, peering into the foliage for insects which form the greater part of its food, but it is probable that it will also eat a few grass seeds when these are softened by the rain or heavy dew. I noticed these birds very plentifully distributed through the far north-west in the Tarcoola and Wilgene districts ; they had a slightly ashy tinge over the plumage, being due to the presence of the red clay earth and dust in all directions met with, the young being especially rusty in coloration, but other than this they were identical with the southern examples about the Adelaide districts. I saw large young in the Wilgene district in May, showing that they must lay just when a little rain comes, as they had had a small downpour in the previous March, the first for two years, and these little birds had bred at once, although but few birds had followed suit, as the weather had again set in dry and hot."

WHITEFACE.

Mr. Sandland states: "Absolutely the commonest bird at Bahah, South Australia, even more so than the crows."

Mr. Edwin Ashby wrote: "Very numerous a few miles North of Adelaide and throughout the lower North of South Australia."

Mr. A. G. Campbell noted: "Homely and fond of the haunts of men as *Acanthiza chrysorrhoa* is, it is outshone in the northern districts of Victoria by this species. Its chubby little form and cheerful song are to be noticed about every homestead. It nests with unconcern under eaves, in thatches, in hollow posts and spouts, and in garden and other bushes. It rears four, sometimes five, young at a time."

Mr. Thos. P. Austin's note reads: "In the open forests and ring-barked country, this is undoubtedly the commonest bird of the district, Cobbora, New South Wales; mostly met with in small flocks of from three to eight, feeding upon the ground. It is extremely tame and often takes up its abode about dwellings, but I have never seen them in thick scrub. When disturbed they take a very short flight, only to settle upon the ground again, or the nearest tree and often a fence. They nest in a great variety of situations, much the same as a Sparrow (*Passer domesticus*). In Victoria I noticed most of them placed their nests in the underneath part of a Magpie's nest, but in this district they mostly build in hollows in dead trees, but about my house they nest in creepers growing on my verandah, in hedges, and between rafters and the roofs of sheds and out-buildings. The clutch is usually three, often four, and they rear two or three broods in a season, using the same nest each time. I have examined nests containing eggs from the last week in July till the end of October."

Whitlock, writing about the birds of the Nullarbor Plains, states: "The Whiteface I saw was *Aphelocephala leucopsis*, and that not till I got to Naretha. It was nesting in a variety of situations, and showed its usual fearlessness of man. At Haig it was nesting in thick blue bushes for the most part. Four eggs seem to be a full clutch. The nests, though very bulky, are far from neat, and have a spout-like entrance. At Naretha some were placed in the lowest forks of dead bushes and without the slightest concealment. The eggs were often embedded in rabbit fur."

Captain White, writing of the Birds of Lake Victoria and Murray River, recorded: "Fairly numerous round Lake Victoria. One specimen taken at that place, 6/10/17. ♀ iris white; bill and feet black; length 110 mm.; spread 180 mm. This bird approaches somewhat *A. l. whitei*, and is of a much more ruddy coloration when compared with the form found lower down the river, and is smaller," and of the Central Australian *A. l. whitei* later wrote, "Numbers of these birds were seen along our route (to the Finke River). They

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have a very much more consistent rufous coloration on upper surface and flanks in comparison with *A. leucopsis*."

Milligan gave a complete technical diagnosis when he proposed this new species *X. castaneiventris*, and added the field-notes of Mr. Lawson: "The cinnamon flanks are a consistent feature. The call-note is musical, though rather plaintive. They love rocky places and are ground feeders. Usually I find the species in company with *Sericornis brunnea* and *Acanthiza pyrrhopygialis* (sic). They are fairly common, but I have been leaving them until in good feather. They are a fluky plumaged bird, and the loss of a few feathers about the head is always perceptible and an eyesore."

Then Milligan, in his notes on a trip to Yandanooka District, wrote: "I was, indeed, pleased to meet with this new species. The birds were in great numbers. They associate in small companies, and for the most part keep to the prickly bushes before mentioned. They appear to feed on the ground under these bushes, and when alarmed rise into them. They are very sprightly in their movements, and their song is composed of two or three plaintive but musical notes. Their loosely constructed nests are built in the prickly bushes. The plumage of one bird that I shot was wholly tinged with warm chestnut."

Later, when the bird was figured in the *Emu*, was added: "This species was first discovered by Mr. J. T. Tunney at Pindar in the Murchison district. The birds associate in small companies and prefer the red soils. They are ground feeders."

Gibson, commenting on birds observed between Kalgoorlie and Eucla, wrote: "Common in the mulga country only; is not found east of the big spinifex and mallee belt or on it; is the western variety of *X. leucopsis*, which is only found on the east side of the spinifex belt, i.e., on the plain country."

Whitlock writing about the birds of East Murchison: "Found fairly common around Lake Way. It was perhaps most numerous in the neighbourhood of Wiluna and the mining belt of the south. I found a number of nests, all of which were built in hollow trunks at no great height from the ground," and suggested previous accounts of nesting of this species were incorrect.

Mr. Tom Carter wrote: "The Murchison Whiteface was seen, rather numerously, feeding on ground, below scrub about Mullewa, sixty miles east of Geraldston in March, 1904."

Captain S. A. White recorded under the name: "*Aphelocephala leucopsis* subsp. (?) Murchison Whiteface. Distributed very generally over the central regions. We collected specimens soon after leaving the head of the line and up to the MacDonnell Ranges. They were often found in company with *A. nigricincta*. I quite agree with others that *A. leucopsis* is not found in the

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central regions; evidently this bird was mistaken by the Horn Expedition for it." He otherwise referred to it as resembling "both *A. leucopsis* and *A. p. castaneiventris*." He sent me specimens and I described them as *A. castaneiventris whitei* and he further wrote: "This subspecies was plentiful all through the Musgrave and Everard Ranges, but none were met with between the Cooper and Strzelecki Creeks, their place being taken by *A. leucopsis*."

Carter has recently written: "Several small parties of Murchison Whiteface were seen in mid-September, 1916, in scrubby country between the Lower Gascoyne and Minilya rivers, where I had never previously seen any of these birds; but I had obtained specimens in 1904 at Mullewa, three hundred miles to the south. Shortridge found them 'fairly numerous as far north as the Upper Gascoyne River (Clifton Downs Station)' in 1908; so, at present, the locality where my specimens were obtained is the most northerly record, being sixty miles farther north, and about one hundred nearer to the coast (westwards) than Clifton Downs. The birds were tame, feeding on the ground below short scrub, into which they took shelter when disturbed. . . The Minilya birds are more rufous on the mantle than any of the others (specimens in the Brit. Mus.), which were mostly obtained in localities to the south-east—as Laverton, 600 miles south-east from the Minilya, and Day Dawn, about 300 miles to the south-east. . . The specimens from Day Dawn are almost white on the whole of the under-surface and can be separated easily from any of the others."

Milligan's diagnosis reads *X. castaneiventris* "may be distinguished from (a) *X. leucopsis* by the presence of a thicker bill and of deep dull chestnut rump, flanks, and sides, and a chestnut and white abdomen, and white chin, throat, and chest, and of the absence of the faint subterminal cross bars on the breast; (b) from *X. pectoralis* principally by the absence of the chestnut-brown back and the well defined pectoral band of cinnamon-brown and the chestnut and white flanks, which in the new species are almost uniform chestnut; and (c) from *X. nigricineta* by the absence of the narrow black pectoral band and the cinnamon back which distinguish that species. The new species appears to occupy an intermediate position between *X. pectoralis* and *X. nigricineta*."

This species was accepted as valid, and when I prepared my "Reference List" in 1912 from Gould's description I regarded it as the western representative of *A. pectoralis*, and this was continued in my 1913 "List."

Captain White's discovery of a Central Australian bird which resembled both *A. pectoralis* and *castaneiventris* complicated matters and I described this as

Aphelocephala castaneiventris whitei.

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“Differs from *A. c. castaneiventris* in being darker above and in having the flanks very much paler. Jay Waterhole, MacDonnell Ranges, Central Australia.”

A later consideration in connection with true *A. pectoralis* re-discovered by Captain White led me to the erroneous conclusion that North's *A. nigricincta* was the adult of *A. pectoralis*, but also to the probably correct conclusion that *A. castaneiventris* was only the western form of *A. leucopsis*, a view published by Gibson some years before.

Previously I had described two subspecies of *A. leucopsis*, a pallid form from Leigh's Creek, South Australia, as *A. l. pallida*, writing: “Differs from typical *A. leucopsis* Gould in being much paler in colour, both above and below,”

and *Aphelocephala leucopsis missa*.

“Differs from *A. l. leucopsis* in its browner coloration above and yellower below, and especially in its pale head. (Narandera) New South Wales.”

At present only a few subspecies are admitted in comparison with the number indicated.

Aphelocephala leucopsis leucopsis (Gould),

South Australia, limits of range unknown.

Aphelocephala leucopsis missa Mathews,

New South Wales, Northern Victoria.

Aphelocephala leucopsis pallida Mathews,

Leigh's Creek, Interior of South Australia.

Aphelocephala leucopsis whitei Mathews.

MacDonnell Ranges, Central Australia.

Aphelocephala leucopsis castaneiventris Milligan.

Mid-west Australia.

Aphelocephala leucopsis minilya Mathews.

North Mid-west Australia.

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APHELOCEPHALA PECTORALIS.
 (CHESTNUT-BREASTED WHITEFACE).
 APHELOCEPHALA NIGRICINCTA.
 (BLACK-BANDED WHITEFACE).

APHELOCEPHALA PECTORALIS.

CHESTNUT-BREASTED WHITEFACE.

(PLATE 494.)

XEROPHILA PECTORALIS Gould, Ann. Mag. Nat. Hist., Ser. IV., Vol. VIII., p. 192, Sept. 1st, 1871: Port Augusta, South Australia, error = Wanta Pilla Swamps, Central Australia.

Xerophila pectoralis Gould, Ann. Mag. Nat. Hist., Ser. IV., Vol. VIII., p. 192, 1871; *id.*, Birds New Guinea, pt. I. (Vol. III., pl. 27), Dec. 1st, 1875; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 186, 1878; Gadow, Cat. Birds Brit. Mus., Vol. VIII., p. 74, 1883; Ramsay, Tab. List Austr. Birds, p. 9, 1888; Hall, Key Birds Austr., p. 30, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 289, 1901.

Aphelocephala pectoralis Oberholser, Proc. Acad. Nat. Sci. Philad., 1899, p. 214; Mathews, Handl. Birds Austral., p. 87, 1908; S. A. White, Emu, Vol. XIV., p. 99, 1914; *id.*, South Austr. Ornith., Vol. I., pt. 4, p. 26, 1914; *id.*, Trans. Roy. Soc. South Austr., Vol. XXXIX., p. 756, 1915.

Aphelocephala pectoralis pectoralis Mathews, Nov. Zool., Vol. XVIII., p. 378, 1912; *id.*, List Birds Austr., p. 246, 1913; S. A. White, Emu, Vol. XIV., p. 189, 1915.

Aphelocephala pectoralis todmordeni Mathews, Austral Av. Rec., Vol. V., pts. 2-3, p. 35, Feb. 21st, 1923: Todmorden, Central Australia.

DISTRIBUTION. Central Australia, near Oodnadatta.

Adult male. Top of head and nape rust-grey with dark centres to the feathers; fore-head black, minutely speckled with white, base of fore-head and lores cream-white; sides of face dusky-brown speckled with whitish; upper back and scapulars walnut-brown, inclining to chestnut on the rump where the base of the feathers are white; lesser and median upper wing-coverts rust-brown with dark centres to the last; bastard-wing blackish; primary-coverts and greater upper wing-coverts dark brown with pale margins; flight-quills hair-brown with buffy-white inner margins, the innermost secondaries darker and the buff margins wider; upper tail-coverts rust-brown; tail-feathers dark brown with pale edges, the outer ones black tipped with white; chin white with hair-like tips to some of the feathers; throat and fore-neck white with blackish bases to the feathers; breast and sides of breast hazel; abdomen and under tail-coverts cream-white; sides of body also white blotched with chestnut; thighs cinnamon; axillaries cream-white; under wing-coverts grey tinged with cinnamon and having dark bars on the outer edge; under-surface of flight-quills hair-brown with buff inner margins; lower aspect of tail similar to its upper-surface. Eyes white, bill and feet black. Total length 105 mm.; culmen 7, wing 58, tail 39, tarsus 20. Figured. Collected at Todmorden, 60 miles west of Oodnadatta,

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Central Australia, on the 2nd of July, 1914, and is the type of *A. p. todmordeni* (middle figure). The sexes are alike.

Adult male. Crown of head and nape rust-grey with dark centres to the feathers of the former; a narrow band of black across the fore-head, some of the feathers minutely tipped with white; lores, base of fore-head, and fore part of cheeks buff; sides of face rust-grey speckled with whitish; upper-back and scapulars hazel; lower back and rump dark chestnut where the feathers are white subapically; upper wing-coverts dark brown with buff margins to the feathers; bastard-wing darker and inclining to blackish; flight-quills hair-brown with whitish margins on the inner webs, the innermost secondaries blackish-brown broadly margined with buff; upper tail-coverts rust-brown; tail blackish, the outer feathers tipped with white, which extends along the outer web of the outermost feather; nasal-bristles buffy-white; chin white with hair-like tips to some of the feathers; throat also white with blackish bases to the feathers; upper breast hazel which becomes darker on the lower breast where the feathers are barred subapically with black; abdomen and under tail-coverts white; thighs rust-brown; sides of body white heavily blotched with chestnut; under wing-coverts cinnamon becoming grey on the greater series; under-surface of flight-quills hair-brown with pale buff margins; lower aspect of tail similar to its upper-surface. Eyes dull white, bill and feet black. Total length 100 mm.; culmen 7, wing 57, tail 40, tarsus 19. Figured. Collected at Wantra Pilla Swamp, Central Australia, on the 9th of July, 1914. (Top figure.)

Immature. Crown of head earth-brown with dark centres to the feathers, darker and inclining to black on the fore-head; nape, sides of face, and sides of neck similar but more uniform in colour; back and scapulars chestnut; upper wing-coverts dark brown with pale margins to the feathers; flight-quills hair-brown broadly margined with fulvous on the inner secondaries; tail missing; base of fore-head and lores cream-white; chin and throat white with dark bases to the feathers; breast dull chestnut; abdomen white; thighs rust-brown; sides of body also white with chestnut tips to the feathers, axillaries white tinged with pale chestnut; under wing-coverts grey tinged with cinnamon; under-surface of flight-quills hair-brown margined with buffy-white. Eyes white, feet and bill black. Collected at Todmorden, 60 miles west of Oodnadatta, Central Australia, on the 2nd of July, 1919.

Immature. Top of head, hind-neck, and mantle earth-brown with a ferruginous tinge; sides of face similar but paler; a slight indication of a whitish superciliary line above and behind the eye; back and scapulars chestnut; upper wing-coverts earth-brown; bastard-wing, primary-coverts, and flight-quills hair-brown, the inner secondaries broadly margined with fulvous; the feathers on the lower rump whitish; upper tail-coverts rust-brown; tail blackish with smoke-brown or white tips to the feathers; the outermost feather on each side edged with white on the outer web; base of fore-head and lores cream-white; chin whitish becoming ash-grey on the throat; breast fawn-colour becoming darker where it joins the white of the abdomen; abdomen and under tail-coverts white; sides of body and axillaries white tipped with chestnut; thighs rust-colour; under wing-coverts grey tinged with cinnamon; under-surface of flight-quills pale hair-brown with buffy-white margins; lower aspect of tail similar to its upper-surface. Eyes white, feet ashy-grey, bill brown. Collected at Wantna Pilla Swamp, Central Australia, on the 18th of August, 1914.

Immature male. Crown of head, nape, hind-neck, sides of neck, and sides of face earth-brown with minute pale shaft-streaks to the last; back pale chestnut like the margins of the innermost secondaries; upper wing-coverts pale brown more

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or less tinged with rust-brown; bastard-wing, primary-coverts, and flight-quills hair-brown with pale margins to the feathers; the feathers on the rump tipped with white; upper tail-coverts similar to the back; tail blackish-brown with greyish-brown, or whitish tips to the feathers, the white extending along the margin of the outermost feather; lores and base of fore-head cream-white, similar to the chin and throat; a very slightly indicated line on the sides of the crown; breast dull fawn-colour with dark tips to some of the feathers; abdomen and under tail-coverts white; sides of body also white with chestnut tips to the feathers; thighs rust-brown; axillaries cream-white; under wing-coverts and inner margins of flight-quills cinnamon; remainder of quill-lining hair-brown; lower aspect of tail similar to its upper-surface. Eyes brown, feet leaden-blue, bill leaden-brown, gape cream. Collected at Wantna Pilla Swamp, Central Australia, on the 21st of August, 1914.

Immature female. Fore part of the head blackish-brown, becoming earth-brown on the crown with dark centres to the feathers, which become obsolete on the hind-neck; entire back and scapulars rust-colour with dusky grey bases to the feathers; upper wing-coverts earth-brown like the outer edges of the primaries; bastard-wing, primary-coverts, and flight-quills dark brown, rather paler at the tips and along the inner margins; upper tail-coverts earth-brown; central tail-feathers dark brown with obsolete cross-bars, the outer ones blackish tipped with white; lores and base of fore-head buffy-white; sides of face greyish-brown with pale minute shaft-streaks; throat whitish tinged with buff becoming pale grey on the fore-neck; breast pale rust-colour; abdomen and under tail-coverts cream-white; flanks and sides of abdomen white with dark lead-colour bases and chestnut tips to the feathers; thighs dusky; axillaries white; under wing-coverts buffy-white minutely spotted with pale grey; under-surface of flight-quills hair-brown with buffy-white margins; lower aspect of tail blackish-brown with white tips to the lateral feathers. Eyes white, feet black, bill leaden-blue. Collected at Wantna Pilla Swamp, Central Australia, on the 21st of August, 1914.

Immature male. Crown of head pale dusky-brown with minute dark centres to the feathers, becoming darker and inclining to blackish towards the base of the fore-head and region of the eye; lores cinnamon-buff; hind-neck and sides of neck similar to the crown but more uniform; back, scapulars and rump dull chestnut; outer aspect of wings pale earth-brown; bastard-wing and inner webs of flight-quills dark hair-brown; upper tail-coverts and base of tail earth-brown, terminal portion of tail-feathers blackish, with more or less white at the tips; base of fore-head and lores cinnamon-buff; chin and throat cream-white with dark bases to the feathers; upper breast and sides of breast cinnamon, some of the feathers of the upper breast showing black tips; lower breast, abdomen, and under tail-coverts cream-white, sides of body silky-white with chestnut markings to the feathers; under wing-coverts white; under-surface of flight-quills hair-brown, with pale buff margins; lower aspect of tail blackish with white tips to the feathers. Eyes white, feet leaden-blue, bill leaden-black. Collected at Indulkana Creek, Central Australia, on the 22nd of August, 1914. Some of these birds have indications of a black band bordering the lower edge of the buff or cinnamon band. Compare the top figure of plate 494.

Nest and eggs not described.

GOULD described this new species as from Port Augusta, South Australia, received from Waterhouse, and it was never re-found or recognised until Captain S. A. White re-discovered it.

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Captain S. A. White has written me : " My late father hunted over thousands of miles for this bird and I have done the same and Dr. Morgan has been on the look out for it for many years. I think we had all come to the opinion that Gould had made some mistake, so you can judge of my surprise when I re-discovered the species in 1914."

Captain White's published notes read : " On June 29th, 1914, my assistant and taxidermist (Mr. J. P. Rogers) brought in a couple of small birds and I at once recognised them as the lost bird. Within a few hours I met with a small party myself and secured several specimens. I found this bird to extend over the country for 100 miles west of Oodnadatta, and seemed to be entirely confined to the tableland country covered with gibber stones and small clumps of low bushes and a few mulga (*Acacia aneura*) growing in the water-courses. *A. pectoralis* was found nearly always in the company of *A. nigricincta* and another species which was very numerous and resembled both *A. leucopsis* and *A. p. castaneiventris*. Their habits seem to be identical with other members of the genus, but their call is distinctive, in being a low plaintive note, and they are not nearly so bold as the common species, and on being alarmed they flew straight away out of gun shot. A few points of rain fell in February over this country, and these birds must have bred, because fully fledged young were collected with the parent birds, but unfortunately I did not meet with any nests containing eggs." He also wrote at the same time in another journal : " It was met with in small parties on the tablelands or gibber country, about 50 miles west of Oodnadatta, and continued to do so off and on till we entered the granite country west of the Indulkana Range, and this range may form the westerly limit. They were hopping about on stony ground in search of seeds. When alarmed they flew into a bush (if one was near), then off to some little distance, and alight upon the ground, where they moved about very quickly. When on the wing they uttered a twittering note. A good series of [the] species was collected—adult males and females, as well as immature birds. Rain having fallen lightly over a restricted area a few weeks prior to our visit, these birds had nested and brought up their young, having quite a number with them. In some cases the young birds had a few dark spots appearing on the faint buff band which crosses the breast."

The series I examined suggested that the re-discovered *pectoralis* was the immature state of *nigricincta*, as in some specimens there was black spotting suggestive of the black band of the latter, and I sank *nigricincta* as a synonym of *pectoralis*, being also influenced when Captain White found the two "species" always associated.

Captain White has, however, written : " It has been put forward that *A. pectoralis* is the immature form of *A. nigricincta*. I am sure this is not

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the case, because I am positive I skinned adult males and females and the young birds, and, strange to say, the younger the birds the more numerous the dark spots on the band. In 1913 during our Central Australian expedition we found *A. nigricincta* nesting in numbers, but never a sign of a bird with a chestnut band."

McGilp has now recorded: "I found five nests of the Black-banded Whiteface, but in every instance only two young were in the nests. Two young birds I have presented to the South Australian Museum; both show the adult plumage, and also have down-like feathers on the head."

From the material sent over by Capt. S. A. White I would have said that this and the next species were identical, but on his authority I am leaving them as distinct.

Comparing the bird that I figure as *A. p. todmordeni* (pl. 494, right-hand figure) with Gould's plate of his type, it will be seen that my bird has not so much white on the fore-head, the upper parts duller, and the flanks not so heavily marked, so we can admit

Aphelocephala pectoralis pectoralis (Gould).

Aphelocephala pectoralis todmordeni Mathews.

Order PASSERIFORMES.

No. 607.

Family SPHENOSTOMIDÆ.

APHELOCEPHALA NIGRICINCTA.

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(PLATE 494.)

XEROPHILA NIGRICINCTA North, Ibis, 1895, p. 340, July 1st : Missionary Plain, Central Australia.

Xerophila nigricincta North, Ibis, 1895, p. 340 ; *id.*, Rep. Horn Sci. Exped. Zool., Vol. II., p. 82, pl. 7, 1896 ; Hall, Key Birds Austr., p. 30, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 289, 1901 ; North, Austr. Mus. Spec. Cat. No. 1, Vol. I., p. 294, 1904.

Aphelocephala nigricincta Oberholser, Proc. Acad. Nat. Sci. Philad., 1899, p. 214 ; Mathews, Handl. Birds Austral., p. 87, 1908 ; *id.*, Emu, Vol. X., p. 303, 1911 (N.T.) ; S. A. White, *ib.*, Vol. XIV., p. 99, 1914 ; *id.*, Trans. Roy. Soc. South Austr., Vol. XXXVIII., p. 434, 1914 ; *id.*, *ib.*, Vol. XXXIX., p. 756, 1915 ; *id.*, *ib.*, Vol. XLI., p. 462, 1917 ; McGilp, South Austr. Orn., Vol. V., pt. 4, p. 98, 1920 ; *id.*, Emu, Vol. XXI., p. 49, 1921 ; *id.*, *ib.*, Vol. XXII., p. 285, 1923.

Aphelocephala nigricincta nigricincta Mathews, Nov. Zool., Vol. XVIII., p. 378, 1912 ; *id.*, List Birds Austr., p. 247, 1913 ; S. A. White, Emu, Vol. XIV., p. 190, 1915.

Aphelocephala nigricincta tanami Mathews, Nov. Zool., Vol. XVIII., p. 378, Jan. 31st, 1912 : Tanami, Northern Territory ; *id.*, List Birds Austr., p. 247, 1913.

Aphelocephala pectoralis nigricincta Mathews, Emu, Vol. XVI., p. 35, 1916.

Aphelocephala pectoralis tanami Mathews, *ib.*

DISTRIBUTION. Central Australia from Strzeleck Creek in south to Tanami in north.

Adult male. Crown of the head, fore-head, lores, sides of neck and hind-neck cinnamon-rufous ; back and scapulars similar but darker and inclining to pale chestnut ; upper wing-coverts earth-brown with pale margins ; bastard-wing, primary-coverts, and flight-quills hair-brown with pale edges to the feathers, becoming darker on the inner secondaries with cinnamon-rufous margins ; tail-feathers pale brown at the base becoming whitish towards the tips, which are partially white ; a line across the fore-head, which is continued through the eye to the ear-coverts dark brown ; throat and upper breast cream-white with a tinge of cinnamon on the chin ; sides of breast similar to the sides of the neck ; a black band across the lower breast ; abdomen, sides of body, and flanks cream-white with pale chestnut markings to the feathers ; thighs and under tail-coverts pale buff ; under wing-coverts cinnamon-buff ; remainder of quill-lining pale hair-brown ; lower aspect of tail similar to its upper-surface. Eyes white, feet slatey-black, bill black. Collected 25 miles west of Todmorden, Central Australia, on the 25th of August, 1914.

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Adult female. Crown of head dark cinnamon with blackish shaft-lines; hind-neck, sides of neck and upper back cinnamon-rufous becoming chestnut on the lower back, scapulars and rump; upper tail-coverts cinnamon-rufous; upper wing-coverts dark brown with pale fringes to the feathers; bastard-wing blackish, minutely tipped with white; flight-quills hair-brown with pale margins to the inner webs; innermost secondaries blackish, broadly margined with cinnamon; tail-feathers brown on the basal portion where they are fringed with cinnamon, becoming blackish towards the apical portion and tipped with white; a narrow black band across the fore-head; base of fore-head and lores buffy-white; ear-coverts pale brown; nasal bristles black; chin buffy-white with hair-like tips to some of the feathers; throat and fore-neck greyish-white with blackish bases to the feathers; a black band across the lower breast; abdomen cream-white like the thighs; sides of body chestnut intermixed with white; under tail-coverts cream-white; axillaries and under wing-coverts pale cinnamon; under-surface of flight-quills hair-brown margined with pale buff; lower aspect of tail similar to its upper-surface. Eyes white, bill leaden-brown; feet and tarsi leaden-blue. Total length 115 mm.; culmen 9, wing 57, tail 38, tarsus 19. Figured. Collected at Tanami, Northern Territory, on the 27th of March, 1910, and is the type of *A. n. tanami*. The sexes are alike. "Young have adult plumage from nest." (McGilp.)

Eggs. Three eggs usually form the clutch. A typical clutch of three eggs taken at Illamurta, on the Finke River, Central Australia, on the 6th of April, 1898, is of a very pale pinkish-white ground-colour, speckled and spotted with pale reddish-brown and purplish-grey, forming an irregular zone at the larger end of each egg. Ovals in shape; surface of shell smooth, and slightly glossy. 17-18 mm. by 13.

Nest. "Rather a bulky, domed-shaped structure, and is invariably placed in a prickly bush or shrub. The outside of the nest is usually composed of dark-coloured twigs, making it rather conspicuous. Inside these dark-coloured twigs is placed a lining of flower stems and flower pods with a final lining of soft feathers. The entrance to the nest is a long, narrow funnel about one inch in diameter and six to nine inches in length. This funnel is lined with feathers for a third of the distance from the egg cavity." (McGilp.)

Breeding-season. April, May. (McGilp.)

NORTH described this species thus: "*Xerophila nigricincta* sp. n. Adult female. Like *X. pectoralis*, from Port Augusta, but distinguished by having the breast crossed by a narrow black band, instead of a broad and well defined band of cinnamon-brown across the chest, as in that species. Total length 3.9 inches, wing 2.2, tail 1.7, bill from gape 0.45, tarsus 0.68. The sexes are alike in plumage. Hab., Missionary Plains, Central Australia."

Mr. J. P. Rogers then came across it at Tanami in the Northern Territory, which seems to be the northern edge of the vast mulga area of the interior. He wrote: "First seen at Tanami and from there south was fairly numerous and several nests seen but eggs were heavily incubated."

Then Captain S. A. White found it at the type locality and also extended the range westwards and southwards. He wrote: "This species was discovered by the Horn Expedition and described by North. It was not until we were approaching the Northern Territory boundary that we met with these

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birds. Up to that time *A. leucopsis* subsp. (?) was met with, and after passing Charlotte Waters the both species occurred. *A. nigricincta* was found nesting in the low bushes. Their habits do not differ from [those of] other members of the genus. Their note is a much weaker one, and can be identified from the other species at once. They spend much of their time on the ground, making a twittering call when hopping about in a sprightly manner in companies of eight or ten, sometimes more." Later, about the Musgrave and Everard Range trip, Captain White wrote: "Numbers of these birds were met with on the stony tablelands, often in company with *A. pectoralis*, and like that bird were not seen after entering the granite country, although *A. c. whitei* was present everywhere."

Neil McGilp has written since: "This species was noted in flocks of from two to six in number. The call is much sweeter and very different from the ordinary Whiteface, and this bird spends more of its time on the ground. Though we were camped on a bore stream I did not note this species coming into water, although often seen within a quarter of a mile of it. All other birds observed in the district were noted at the water. This Whiteface started to nest, in common with Orange-fronted Chat, White-winged Wren, and Chestnut-crowned Warbler, three weeks before the drought broke. The nest is a bulky, retort-shaped structure, the outside being of twigs or branchlets of the 'Rolly poley' (Buck Bush), and inside this a layer of dried flower stems and flower pods, with a final snug lining of soft feathers. The noticeable thing about the nest is the long, narrow entrance, one I measured being 9 in. long, and only about $1\frac{1}{2}$ inches in diameter; this is only scantily lined with feathers for about half the distance from the egg chamber. The nesting places noted were in a Buck Bush (usually a half green one), which showed up the nest conspicuously, it usually being of a very dark colour; the nest was also found in a prickly acacia, called 'Dead finish'; the reason for the name can be readily understood if one accidentally comes in contact with it. I noted that both birds took part in building the nest. They left the nest together, and only one, the female, I presume, in returning carried material, the other bird accompanied her to the bush, whereon he sat and whistled until the former had placed the material in the nest. Then the mate flew off alone, and returned with material which the female, who had remained, took and placed in the nest. After this, both birds flew off to again repeat this system; this was done without variation for over an hour, though, of course, I was not able to identify the female. The clutch appeared to be of two eggs only, for only one clutch of three was noted, and several nests containing two very young birds were observed, but as I left the district a few days after the rain, I was not able to note if the young from the nest had

BLACK-BANDED WHITEFACE.

the black band. Very few eggs were hatched out before the rain. Did these birds know that the drought was to break or was it a good guess?

"These birds do not resent one touching the nest, or eggs or young, which is rather strange, as it is necessary to almost destroy the long narrow entrance in order to inspect the contents of the nest."

McGilp later added that young birds from the nest show the adult plumage and also have down-like feathers on the head, thus confirming Captain White's observations that this is a distinct species from Gould's *pectoralis* with which from study of a series I had associated it.

The two forms admitted in my 1912 "Reference List" are still valid:

Aphelocephala nigricincta nigricincta (North).

Central South Australia.

Aphelocephala nigricincta tanami Mathews.

"Differs from *A. n. nigricincta* in its deeper coloration above, especially on the head and the flank markings, while paler below. Tanami."

Interior of Western Northern Territory.

GENUS—SPHENOSTOMA.

SPHENOSTOMA Gould, Synops. Birds Austr., pt. iv.,
pl. (63), April 1st, 1838. Type (by monotypy) .. *S. cristatum* Gould.

SMALL crested birds with short laterally compressed deep bills, short wings, long tail, longish legs and delicate feet.

The bill is shorter than the head, the culmen arched, the tip sharp but not hooked, laterally compressed even at base, so that the stout lower mandible is nearly as deep as upper and the depth of the bill at base is more than half its length; the interramal space very short, almost obsolete, the gonyes keeled and up-curved; the culmen ridge keeled; the linear nostrils strongly operculate in a deep short groove, hidden by frontal feathers and outstanding nasal bristles, but rictal bristles few and slight.

The wing is rounded, the fourth, fifth, sixth and seventh subequal and longest, the third a little shorter and about equal to the eighth, the second shorter than the ninth, which is equalled by the secondaries; the first primary short, about half the length of the third.

The tail is very long and regularly wedge-shaped, longer than the wing.

The stout legs are strongly scutellate in front, bilaminate behind; the feet are small, the claws rather flattened and long, the hind-toe a little stouter than the middle toe, but the hind-toe and claws little shorter than the middle toe and claw; the outer and inner toes subequal, the inner a little shorter than the outer, and with claw less than middle toe alone.

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SPHENOSTOMA CRISTATUM.
(WEDGE BILL).

SPHENOSTOMA CRISTATUM.

WEDGE-BILL.

(PLATE 495.)

SPHENOSTOMA CRISTATUM Gould, Synops. Birds Austr., pt. iv., pl. (63), April 1st, 1838 :
New South Wales.

Sphenostoma cristatum Gould, Synops. Birds Austr., pt. iv., pl. (63), April 1st, 1838 ; *id.*,
Proc. Zool. Soc. (Lond.), 1837, p. 150, Dec. 1838 ; *id.*, Birds Austr., pt. iii. (Vol.
III., pl. 17), June 1st, 1841 ; *id.*, Handb. Birds Austr., Vol. I., p. 316, 1865 ; Diggles,
Ornith. Austr., pt. xx., 1868 ; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 184,
1878 ; Gadow, Cat. Birds Brit. Mus., Vol. VIII., p. 74, 1883 ; Ramsay, Tab. List
Austr. Birds, p. 5, 1888 ; Hall, Key Birds Austr., p. 31, 1899 ; Campbell, Nests
and Eggs Austr. Birds, Vol. I., p. 269, 1901 ; Carter, Emu, Vol. III., p. 90, 1903
(N.W.A.) ; North, Austr. Mus. Spec. Cat. No. 1, Vol. I., p. 341, 1904 ; Milligan,
Emu, Vol. IV., p. 154, 1905 (W.A.) ; Mathews, Handl. Birds Austral., p. 87, 1908 ;
Gibson, Emu, Vol. IX., p. 74, 1909 (W.A.) ; Whitlock, *ib.*, p. 208, 1910 (W.A.) ;
Macgillivray, *ib.*, Vol. X., p. 29, 1910 (N.S.W.) ; Campbell, *ib.*, Vol. XIII., p. 69,
pl. XIII., f. 13 (egg), 1913 ; Whitlock, *ib.*, Vol. XX., p. 186, 1921 (W.A.) ; *id.*, *ib.*,
Vol. XXI., p. 179, 1922 (W.A.) ; McGilp, *ib.*, Vol. XXII., p. 285, 1923.

Sphenostoma cristatum cristatum Mathews, Nov. Zool., Vol. XVIII., p. 378, 1912 ; *id.*,
List Birds Austr., p. 247, 1913.

Sphenostoma cristatum pallidum Mathews, Nov. Zool., Vol. XVIII., p. 378, Jan. 31st, 1912 :
Leigh's Creek, South Australia ; *id.*, Austral Av. Rec., Vol. I., p. 61, 1912 ; *id.*,
List Birds Austr., p. 247, 1913 ; S. A. White, Emu, Vol. XIV., p. 190, 1915 (Central) ;
id., Trans. Roy. Soc. S.A., Vol. XXXIX., p. 756, 1915 ; *id.*, *ib.*, Vol. XLI., p. 462,
1917.

Sphenostoma cristatum occidentale Mathews, Nov. Zool., Vol. XVIII., p. 378, Jan. 31st,
1912 : Day Dawn, (Mid-) West Australia ; *id.*, List Birds Austr., p. 247, 1913 ;
Carter, Ibis, 1917, p. 608 ; *id.*, *ib.*, 1921, p. 66.

Sphenostoma cristatum tanami Mathews, Nov. Zool., Vol. XVIII., p. 379, Jan. 31st, 1912 :
Tanami, Northern Territory ; *id.*, List Birds Austr., p. 247, 1913.

DISTRIBUTION. Interior of Australia, exact distributional limits undetermined.

Adult male. General colour of the upper-surface dark ochreous-brown including the nape,
sides of face, hind-neck, sides of neck, back, rump, upper tail-coverts, and upper
wing-coverts ; head crested ; fore-part of head somewhat paler than the back

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with dark brown centres to the feathers which widen out and occupy the whole of the crest-feathers on their terminal portion; edge of wing whitish; bastard-wing, primary-coverts, and some of the greater series somewhat darker than the back, especially on the middle of the feathers; flight-quills hair-brown with whitish margins on the inner-webs and on the outer-webs of the fourth and fifth primaries; middle tail-feathers much darker than the back with obsolete cross-bars and pale tips to some of the feathers, the lateral ones black, broadly tipped with white; base of fore-head, lores, and fore-part of cheeks cinnamon-buff; rectal-bristles black but only sparsely developed; the feathers in front of the eye are dark and have hair-like tips; chin and throat greyish-white with a slight tinge of buff, the feathers on the former have hair-like tips; middle of breast and abdomen similar to the throat and chin; sides of the body, thighs, and under tail-coverts darker and more like the back; under wing-coverts similar but paler; under-surface of flight-quills pale hair-brown with buffy-white margins; lower aspect of tail black tipped with white. Eyes dark brown; bill hazel-brown; legs and feet lead-colour. Total length 205 mm.; culmen 12, wing 84, tail 105, tarsus 24. Figured. Collected at Day Dawn, Mid-west Australia (interior), on the 15th of May, 1903, and is the type of *Sphenostoma cristatum occidentale*.

Adult male. General colour of the upper-surface mouse-brown with a tinge of fawn-colour, paler on the top of the head, nape, sides of face, hind-neck, and sides of neck; edge of wing and outer-margins of the fourth and fifth primaries whitish; flight-quills hair-brown with pale margins; upper tail-coverts like the back; tail-feathers dark bronze-brown with obsolete cross-bars, the outer feathers tipped with white which increases in extent towards the outermost, which inclines to blackish at the base; nasal bristles black; the feathers in front of the eye black and hair-like; chin greyish-white with hair-like tips to the feathers; throat, breast, abdomen, sides of body, thighs, and under tail-coverts greyish-fawn colour; axillaries, under wing-coverts, and margins of quills below like the breast; quill-lining hair-brown; lower aspect of tail similar to its upper-surface. Bill yellow, tip black, feet leaden-colour. Total length 195 mm.; culmen 11, wing 82, tail 90, tarsus 25. Figured. Collected at Leigh's Creek, interior of South Australia, on the 19th of October, 1910, and is the type of *Sphenostoma cristatum pallida*.

Adult male. General colour above dark ochreous-brown, including the head, back, and wings; fore-part of the head paler than the back with dark brown centres to the feathers, the terminal portion of the crest-feathers uniform blackish-brown; sides of face, sides of neck, and nape uniform pale drab-grey; outer edge of wing whitish like the outer web of the bastard-wing and outer primary-coverts; flight-quills hair-brown fringed with white on the inner webs and on the outer webs of the first, fourth and fifth of the primaries; long upper tail-coverts and middle tail-feathers dark bronze-brown, the outer ones black, broadly tipped with white; lores blackish in colour and bristly in structure; nasal bristles black; chin and throat dull white, with hair-like tips to the feathers on the former, becoming somewhat darker on the breast and abdomen and inclining to dull fawn-colour on the flanks and short under tail-coverts, the long ones pale brown broadly fringed with white; axillaries like the breast; under wing-coverts and margins of flight-quills below greyish-white, the remainder of the latter pale hair-brown; lower aspect of tail similar to its upper-surface. Eyes brown; bill black, feet and tarsi leaden-olive. Total length 209 mm.; culmen 11, wing 80, tail 97, tarsus 24. Collected at Tanami, Northern Territory, on the 10th of March, 1910, and is the type of *Sphenostoma cristatum tanami*.

Adult female. General colour of the upper-surface mouse-brown, including the top of the head, back, and wings; the feathers on the fore-part of the head have dark shaft-lines and the apical portion of the crest dark hair-brown; edge of wing and outer-margins of the fourth and fifth primary-quills white, remainder of flight-quills

WEDGE-BILL.

hair-brown both on the outer and inner-webs; upper tail-coverts like the back; middle tail-feathers uniform dark bronze-brown with obsolete cross-bars, becoming darker towards the outermost feathers on each side, which are almost black and broadly tipped with white—the white decreasing in extent towards the centre ones; nasal bristles black; lores similar to the crown; hinder-face and sides of neck dove-grey; chin and throat white; breast, abdomen, and sides of body dove-grey, somewhat darker and inclining to fawn-colour on the last; short under tail-coverts similar to the abdomen, the long ones pale brown tipped with white; axillaries like the breast; under wing-coverts greyish-white with dark mottlings; under-surface of flight-quills hair-brown with pale margins; lower aspect of tail similar to its upper-surface. Bill and eyes black, legs and feet dark lead-colour. Total length 218 mm.; culmen 13, wing 80, tail 99, tarsus 25. Collected at Point Cloates on the 2nd of June, 1899.

Adult female similar to the male.

Eggs. Two to three eggs form the clutch. A typical clutch of two eggs taken at Opher Creek, near Cunnamulla, South-west Queensland, on the 12th of September, 1898, is of a beautiful bluish-green, moderately but boldly spotted with blackish markings, scattered here and there. Ovals in shape; surface of shell smooth and slightly glossy. 24 mm. by 17. Another clutch of three eggs taken in the same locality measure 23–24 mm. by 16. They are smaller specimens, and more pointed ovals in shape than is the case with those of the previous clutch. Surface of shell smooth and slightly glossy.

Nest. An open, shallow cup-shaped structure of twigs and grass, and lined with fur and grass, etc., and usually placed in a low bush, often within four or five feet of the ground.

Breeding-months. Usually August, September to January.

THIS distinct genus (and species) was described by Gould before he went to Australia and he does not appear to have met with it himself while out there. He apparently heard some tales about it for he wrote: "The Crested Wedge-bill is an inhabitant of the low scrubby trees and *Polygonum* bushes which stud the hot plains of the interior of Australia, particularly those on the borders of the Lachlan and Darling; it has also been killed on the Lower Namoi. Whether it has any kind of loud sharp whistle analagous to that of the Coach-whip-bird (*Psophodes crepitans*), or if it has the same shy disposition, it would be interesting to ascertain."

Captain S. A. White has written me: "*S. c. cristatum*. I take this to be the dark coloured form (both are to be found in South Australia). Met with this bird in many places along the Flinders Range. It is a very lively bird and a beautiful songster. I have found them rather timid, but if they think they are not observed they show off their crest and sing to great advantage. They are interior birds and I have never seen them in coastal areas where there is a big rainfall. Nesting season September and October. *S. c. pallidum*. This is the central Australian form."

Of the latter his notes read: "On the Finke River a pair were calling amongst some dead acacias and were very shy; their movements are very

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quick, and they keep low down in the undergrowth." "Scattered throughout the country visited (the Musgrave and Everard Ranges), were met with in very dry localities. They move very rapidly over the ground in long hops, taking flight every little while to a low bush and while on the wing invariably spread out their tail, and when they alight hop from branch very quickly with crest erected." (Between the Cooper and Strzelecki Creeks.) "These strange birds were not plentiful and were very shy. Generally met with in the dense bushes of lignum (*Muchlenleckia cunninghamii*) growing in dry watercourses, and on flooded ground. They kept very close to cover, and when beaten out showed great cleverness in reaching cover again without giving a chance of a shot. They possess a very sweet song, and, if they think they are not observed, will go through all kinds of antics, hopping from one twig to another, hanging with head downwards, bobbing the head up and down, raising and lowering the crest, and all the time giving forth strange notes."

Macgillivray has written of the typical form from Broken Hill: "Two Wedge-bills (*S. cristatum*) were dislodged from a bushy acacia. These birds usually frequent small bushy trees in the gullies or watercourses, or clumps which grow off the main creeks, along which they are never found. In their habits, situations they frequent, and mode of flying they are readily distinguished from the *Oreoica*, the only other crested bird of about the same size in this district. In flying, the Wedge-bill, like the Babbler, makes a few wing strokes and then sails along on extended pinions, the flight not being sustained for any distance. They do not feed on the ground like the *Oreoica*, nor are they ever found in the mulga scrub. The song is loud, pleasing and continued; it is often given forth while the bird is perched on the top of a low bush."

Mr. J. P. Rogers sent it from Tanami noting: "Sparingly distributed in low lying scrubby country."

Recently Whitlock has written about the birds of the Nullarbor Plain: "The Wedge-bill (*Sphenostoma cristatum*) was far less common than the Bell-bird, and seldom found away from the dongas. I observed a nest at Naretha in a small acacia, the sitting bird being visible some distance away. A family party in a donga at Haig were inquisitively watching me eat an orange, as I sat during a heavy squall under the lee of a large blue-bush. A strong gale was blowing at the time. When on the ground under a bush, the Wedge-bill is not unlike a Grass Wren (*Diaphorillas*), a species I did not meet with during the trip."

Mr. Tom Carter has written: "The Westralian Wedge-bill is given in your 'Reference List' 1912 as ranging through West Australia. Its southern

WEDGE-BILL.

range (coastal) is probably about Lat. 29° S. or 250 miles north of the Swan River, and it is fairly common in the scrub in hollows of the coastal hills at Point Cloates. About Carnarvon (port of Gascoyne River) it is one of the commonest birds, occurring close to the beach in suitable scrub, and in the dense thicket and tall wattle bushes growing on the islands and banks of the river. The variety of bush that it seems to prefer to any other is known as Ming-ar by the aborigines. It grows to a considerable size, and has rather broad, dark green leaves, somewhat like those of the Sandalwood tree. These bushes, owing to their luxuriant foliage, are very dark inside, and the Wedge-bills constantly seek their shelter. The song of this bird is one of the most remarkable of any heard in West Australia, and at once attracts attention. It consists of five loud, ringing, metallic notes, somewhat resembling the ringing of an anvil when struck, and when heard, with the bird within a few yards, hidden in the dark shade of a big bush, it seems to cause vibration in one's ears. The local Carnarvon name, 'Sweet-Kitty-Lintôt,' with strong emphasis on the second and *last* syllables, very fairly indicates the rhythm of this song, which is sometimes followed *immediately* after its conclusion, by a sharp, double metallic note. The song is uttered very rapidly, and kept up, without any pause, for a surprising length of time. According to my observations, both sexes sing. The nests are usually within three or four feet of the ground, and resemble those of *Oreoica cristata*, made of small twigs and lined with grass. Clutch of eggs two or three. The species is very shy and wary as compared with the Bell Bird, which is of a tame disposition. The Wedge-bill's song has been described as ventriloquial, but it seems to me more that it is uttered crescendo and diminuendo, which effect may be caused perhaps, to some extent, by the bird moving about in the shelter of the dense 'Ming-ar' bushes; but the song certainly rises and falls to a great extent, and I have listened, scores of times, to a bird singing within a few feet of me. It is surprising how a bird will keep itself concealed in a bush by continuing to have a branch, or bunch of leaves between itself and you, then suddenly it will fly, close to the ground, from the far side of the bush to another one, with its tail outspread, and the white tips of the tail-feathers showing conspicuously."

Milligan has written from the Yandanooka District, West Australia: "These singular birds were also very numerous in the 'prickly reminder' scrubs, probably owing to the security afforded by them. Many writers have spoken of the species as being extremely shy and difficult of approach, but that was not my experience. Their marvellously developed ventriloquial powers certainly make the birds difficult to locate, but, when once located, they are easy to approach. I could have shot a score without any trouble. They are able to throw their voices at least three hundred yards in any

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direction. Their notes are four, given with a clear, ringing, bell-like sound. When two or three sing in concert all other bird notes are overpowered. Locally they are called (onomatopoetically) 'Jimmy Linthorne' (the name of a local celebrity) and by others the 'Bell Bird.' I much prefer, as a vernacular name, the one suggested by Dr. Morrison, of our party—namely, the 'Chimes Bird'—as it is particularly appropriate. I examined the contents of the stomach of one bird, they included the remains of a grasshopper and the seeds of various plants, which I have not yet had identified. The native name is 'Geetārdō.' "

Gibson recorded it as "Fairly common on the mulga and on the plains (between Kalgoorlie and Eucla) wherever there is a little brush or timber."

Whitlock wrote from the East Murchison: "It always seems to me an error to place this species among the Paridæ. It runs, never hops, seeks its food on the ground, builds an open nest, and lays blue eggs—all un-Titlike habits. Around Lake Way it was far from plentiful, and I only got one nest."

Carter did *not* find it on Dirk Hartog Island, and Whitlock confirmed this, though both found it fairly common on the mainland close to.

Mr. Edwin Ashby says: "In South Australia this is essentially an interior bird, but when in Geraldton, some 300 to 400 miles north of Perth in Western Australia, we learned that this bird comes quite close to the coast, although I did not actually shoot a specimen."

No subspecific forms had been distinguished when I worked up my "Reference List" in 1912, but I then recognised four, which I named:

Sphenostoma cristatum cristatum Gould.

New South Wales.

Sphenostoma cristatum pallidum Mathews.

"Differs from *S. c. cristatum* in its paler upper-surface. Leigh's Creek, South Australia."

South Australia.

Sphenostoma cristatum occidentale Mathews.

"Differs from *S. c. cristatum* in its darker coloration. Day Dawn, West Australia."

West Australia.

Sphenostoma cristatum tanami Mathews.

"Differs from *S. c. cristatum* in its smaller size. Tanami, Northern Territory."

Northern Territory.

In my 1913 "List" the same arrangement was accepted, with the addition of Victoria to the range of the first-named, and a note that in the case of the third it did not occur in the south-west.

FAMILY—SITTIDÆ.

GENUS—NEOSITTA.

NEOSITTA Hellmayr, Journ. für Orn., 1901, p. 187,
April number. New name for *Sittella*
Swainson. Type (by monotypy) *Sitta chrysoptera* Latham.
Sittella Swainson, Classif. Birds, Vol. II., p. 317,
July 1st, 1837 (ex Ency. Geogr. Murray, p. 1484,
July, 1834, *nom. nud.*). Type (by monotypy) *Sitta chrysoptera* Latham.

Not—

Sittella Rafinesque, Analyse Nature, p. 68, 1815.

SMALL "Nuthatches" with long thin bills, long wings, short square tail and short legs and large feet.

The bill is long and thin, about as long as the head, laterally compressed, slight basal expansion, culmen nearly straight with a slight upward tendency anteriorly, the tip sharp and semi-hooked with a posterior notch more noticeable in juvenile birds; the nostrils are linear, strongly operculate, placed basally in a nasal groove which is only about one-fourth the length of the bill; the under mandible is similarly narrow, the interramal space small, triangular, feathered, only extending about one-fourth the length of the bill, the gonys with an upward tendency; though very narrow neither upper mandible nor gonys show any keeling; rictal and nasal bristles present, but weak and insignificant.

The wing is long with the first primary very small, the second longest, the third, fourth and fifth little less, and the succeeding ones rapidly decreasing in length to the medium secondaries.

The tail is short and square, less than half the length of the wing.

The legs are short, the tarsus strongly scutellate in front, about half a dozen scutes being counted, and bilaminate posteriorly.

The anterior toes are weak, the hind-toe and claw long and stout and almost equal to the tarsus in length; the hind-toe is longer than the middle toe, the hind-claw stout, the anterior claws small and delicate, the outer toe longer than the inner, the latter with its claw about equalling the middle toe alone.

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The family Sittidæ to which this and the succeeding genus are attached is one of the remarkable groups which, very well-known superficially, has not received the study as regards anatomy that it deserves. Often classed with the Certhidæ, because it frequents trees in a similar manner, it probably has no close relationship with that family. The peculiar development of the forms of the family in Australia is worthy of a few remarks. None have penetrated into Tasmania, yet apparently extraordinary development has taken place in Australia, as we have both black-headed and white-headed species, while the Northern species have a prominent white wing-bar and the Southern have red wing-bars. The white wing-bars occur in the north in both the white-headed and black-headed species, whilst two distinct species in the south show the red wing-bars. Again the Northern form of the white-headed species has a white wing-bar, the Southern a red wing-bar. In New Guinea a white-headed bird occurs, quite a distinct species, with a white wing-bar; but also in New Guinea is found a bird referred to this family quite unlike any of the Australian birds or any of the Northern species of the family.

This group would afford much of value were an intensive study undertaken, both as regards external and internal features. A. G. Campbell, some years ago, gave a sketch of the forms and distribution as at the time known, and this is a very interesting essay, which could serve as a basis.

Key to Species.

Head brown	..	..	..	..	..	..	<i>N. chrysoptera</i>
Head white							
Wing-bar white	..	..	..	..	..	..	<i>N. albata</i>
Wing-bar reddish-buff		..	..	..	..	..	<i>N. leucocephala</i>
Top of head black							
Under-surface white							
Wing-bar white..	..	..	..	..	..	..	<i>N. leucoptera</i>
Wing-bar reddish buff		..	..	..	..	..	<i>N. pileata</i>
Under-surface striated	..	..	..	..	..	..	<i>N. striata</i>

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NEOSITTA LEUCOCEPHALA
(WHITE-HEADED TREERUNNER).

NEOSITTA ALBATA
(PIED TREERUNNER).

NEOSITTA CHRYSOPTERA
(ORANGE-WINGED TREERUNNER).

NEOSITTA CHRYSOPTERA.

ORANGE-WINGED TREE-RUNNER.

(PLATE 496, 2 bottom figures.)

SITTA CHRYSOPTERA Latham, Index Ornith. Suppl., p. xxxii., after May 1801, based on Watling Drawings Nos. 81 [and 82]: New South Wales.

Sitta chrysoptera Latham, Index Ornith. Suppl., p. xxxii., 1801.

Neops chrysoptera Vieillot, Nouv. Dict. d'Hist. Nat., Vol. XXXI., p. 337, 1819.

Sittella chrysoptera Swainson, Classif. Birds, Vol. II., p. 317, 1837; Gould, Birds Austr., pt. xiv. (Vol. IV., pl. 101), March 1st, 1844; *id.*, Handb. Birds Austr., Vol. I., p. 609, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 191, 1878; Gadow, Cat. Birds Brit. Mus., Vol. VIII., p. 360, 1883; Ramsay, Tab. List Austr. Birds, p. 15, 1888; Hill, Key Birds Austr., p. 36, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 337, 1901; Le Souëf, Emu, Vol. I., p. 63, pl. v., 1902; Hill, *ib.*, Vol. II., p. 165 (1903), Vic.; North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 52, 1906; A. G. Campbell, Emu, Vol. VI., p. 181, 1907; Batey, *ib.*, Vol. VII., p. 8, 1907 (Vic.); Austin, *ib.*, p. 30 (N.S.W.).

Neositta chrysoptera Hellmayr, Das Tierr., 18, p. 196, 1903; Mathews, Handl. Birds Austral., p. 87, 1908; Jackson, Emu, Vol. XII., p. 93, 1912 (Q.); S. A. White, *ib.*, Vol. XIV., p. 142, 1915 (Mallee); Le Souëf and Macpherson, *ib.*, Vol. XX., p. 88, 1920 (N.S.W.); Gilbert, *ib.*, Vol. XXII., p. 124, 1922.

Neositta chrysoptera chrysoptera Mathews, Nov. Zool., Vol. XVIII., p. 379, 1912; *id.*, List Birds Austr., p. 248, 1913.

Neositta chrysoptera lathamii Mathews, Nov. Zool., Vol. XVIII., p. 379, Jan. 31st, 1912: Parwan, Victoria; *id.*, Austral Av. Rec., Vol. I., p. 61, 1912; *id.*, List Birds Austr., p. 248, 1913; Belcher, Birds Geelong, p. 311, 1914.

DISTRIBUTION. New South Wales, Victoria, South Queensland (South Australia?).

Adult male. Crown of head from the fore-head to the nape dusky-black; sides of face similar but intermixed with grey; hind-neck, back, and scapulars grey with blackish longitudinal centres to the feathers; upper tail-coverts white with a subapical spot of black on some of the feathers; upper wing-coverts blackish; flight-quills also blackish with pale margins at the tips and a band of cinnamon-chestnut across each feather, chiefly on the inner-web; tail blackish with white tips to the feathers, except the two middle ones; throat, middle of breast, and abdomen white; sides of breast and sides of body pale drab-grey with dark shaft-lines; under tail-coverts

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white with a black subapical mark to each feather; axillaries drab-grey; lesser under wing-coverts blackish, the greater series white; under-surface of flight-quills dark brown with a patch of cinnamon-chestnut; lower aspect of tail similar to its upper-surface. Eyes leather-yellow, feet light yellow, bill fleshy-horn. Total length 112 mm.; culmen 13, wing 81, tail 36, tarsus 16. Figured. Collected at Parwan in Victoria on the 20th of May, 1910, and is the type of *N. c. lathamii*.

Adult female. Entire top of head, nape, hind-neck, and sides of face dusky-black; back, rump, and scapulars drab-grey with blackish longitudinal centres to the feathers; upper tail-coverts white with a black subapical mark on each feather; upper wing-coverts blackish-brown, becoming paler on the inner greater series and innermost secondary quills; flight-quills black with pale edgings at the tips and a cinnamon-rufous band across the inner webs; tail black with white tips to the lateral feathers; throat white with dark bases to some of the feathers; breast and abdomen white; sides of breast and flanks greyish-white with dark shaft-lines; under tail-coverts white with a broad subapical mark of black; axillaries drab-grey; under wing-coverts black, the greater series white; under-surface of flight-quills dark brown with a patch of cinnamon-rufous; lower aspect of tail similar to its upper-surface. Eyes light ochre-brown, ring round eye light ochre, feet ochre, bill brown. Total length 106 mm.; culmen 10, wing 80, tail 35, tarsus 16. Figured. Collected at Melton, Victoria, on the 6th of June, 1910.

The female differs in having the head black not brown.

Eggs. Three to four form the clutch, usually three. They are subject to much variation in shape, size, general colouring and markings. A rather typical clutch of three eggs taken at Blacktown, near Sydney, New South Wales, on the 14th of October, 1906, is of a very pale greyish-white ground-colour, well spotted and blotched all over, and particularly at the larger end of each egg, with dark olive and slate markings. Rather roundish in shape and slightly pointed towards one end; surface of shell smooth and slightly glossy. 15-16 mm. by 12-13. Another clutch of three eggs, taken at Five Dock, near Sydney, New South Wales, on the 18th of September, 1904, is of a pale greyish-white ground-colour, *minutely speckled* all over with dark olive and slate markings. Ovals in shape; surface of shell smooth and rather glossy. 17-18 mm. by 12.

Nest. A beautiful, neat, cup-shaped structure, placed in the upright, dead, forked limb of a tree at heights varying from 10 to 50 feet or more. The greater portion is composed of spiders' webs and cocoons, neatly interwoven, and give the nest quite a spongy feeling to the touch. If the top portion is bent out of position it corrects itself immediately, owing to the strong elastic tendency of the material used. The edges of the nest are thin. The outside is decorated with small pieces of bark (and sometimes lichen) which are very neatly glued or fastened on perpendicularly, and frequently overlap and resemble the manner in which slates or shingles are secured on a house roof. The nest is wonderfully protected owing to the very remarkable manner in which it harmonises with the surroundings. Measurements are $2\frac{1}{2}$ to $3\frac{1}{2}$ inches in height over all by $2\frac{1}{2}$ to 3 inches across over all. Egg cavity nearly 2 inches across by about $1\frac{1}{4}$ inches deep.

Breeding-months. September to January.

THROUGH Latham's choice of the genus *Sitta* his description was at once recognised, also in consequence of his reproduction of the figure upon which his name was based, and reference to "Mr. Lambert" was given.

ORANGE-WINGED TREERUNNER.

Gould's notes are brief: "New South Wales is the true habitat of this species, over nearly every part of which it is rather plentifully distributed. I generally observed it in small companies of from four to eight in number, running over the branches of the trees with the greatest facility, and assuming every possible variety of position, often, like the Nuthatch, traversing the boles of the trees with its head downwards. During its flight, which is quick and darting, the red mark on the wing shows very conspicuously; its powers of flight are, however, seldom employed, further than to enable it to pass from one tree to another."

Mr. Thos. P. Austin has written me from Cobbora, New South Wales: "Sparingly dispersed throughout the district, found both in the open forests and scrubs. Excepting when breeding, they are to be seen in small flocks of four to a dozen birds, flying from tree to tree which they thoroughly search for their insect food. I notice that some writers state that they only work with their heads downwards, this is a greatly mistaken idea; my experiences are that they more often work upwards than downwards. Seldom are they at rest, hopping about boughs and trunks of trees the whole day, often uttering their plaintive little notes. Only while collecting nesting material have I seen them upon the ground. Seldom if ever are they found in smooth barked trees, as they obtain their food supply from crevices in rough bark or decaying wood or dead trees. The nest is a marvel of neatness, usually placed in a perpendicular fork of a dead branch or a rough barked living tree, and it would invariably escape notice if the birds did not betray its situation. Cup-shaped, composed of wool, fur, spiders' webs, cocoons, etc., outwardly ornamented with small strips of greenish-grey bark, all placed close together somewhat like shingles on the roof of a building. The clutch is usually three and they breed from early in October till the end of the year, in the latter case probably a second brood. It is not unusual to meet with more than one pair of birds assisting in the construction of a nest. They have a habit of building a nest, then without laying, pull it to pieces bit by bit, and rebuild it elsewhere, only to do the same again. When a bird is sitting the other bird feeds it upon the nest."

Mr. F. E. Howe has sent me: "In the tall timber this useful bird is at home, and here they are observed to work in small flocks of from four to eight. They operate together beautifully, and on alighting in a tree disperse to all parts of it and working downwards and under the limb, uttering soft twittering notes the while. A call slightly different seems to be the signal for departure and off they go in an undulating flight one after another. On November 1st a pair had just started to build in the dead fork of a living tree. Both were busily engaged in this task and made visits to the site about every minute. To gather the necessary cobwebs they would fly to the bottom of the tree and work round

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and up. Three days later the spot was visited and it was noticed that the work was suspended, but on the 21st the nest contained three fresh eggs. Both help to feed the young and they also divide the task of incubation, feeding one another on the nest."

Mr. L. G. Chandler wrote me: "I was watching a pair of these birds at Frankston beginning their nest-building when I noticed another pair of the same species fly into the tree. Upon the former pair flying off for more material, the latter pair coolly appropriated some that had been collected and placed in position and flew away with it to construct their own nest. It was late in the evening and camp being miles away I had not time to follow the second pair of birds. A visit the fortnight later found the first nest had not been completed."

Mr. Edwin Ashby and Captain S. A. White both write me that they have never collected this species in South Australia, though not rare in Victoria.

Batey wrote from near Melbourne, Victoria: "A good fifty years have gone since this bird was seen, the trees having been removed; previously, a permanent resident."

From Mr. Gilbert's observations I gather that: "The eggs take twelve to thirteen days to incubate. The young remain in the nest for thirteen or fourteen days. As the young grow from day to day, the parent birds are enabled to leave them for considerable lengths of time. Nature, in her many experiments, has taught the young the necessity of relaxing and exercising their wings before undertaking the risky move of leaving the nest. Many imitations of the flying movement of the wings are fulfilled by the young, which toughen and tighten their sinews and develop their wing and body muscles. From all appearances, it is a time of great anxiety for the parent birds in keeping their young together once they quit the nest. Long after they have left the nest they are waited on by the parents, who are tireless in their efforts to meet the appeals for food expressed by gapes and vibrating wings of their ravenous young.

"Lastly, the peculiar methods this bird adopts when searching for insects may be referred to. As it hops down the branch it throws itself from one side to the other, so that its downward inspection of the chinks in the bark, on both sides of the branch, is achieved in one descent. As soon as one branch has been examined it either commences its search in the larger crevices of the trunk, or flies to the top of another branch."

Le Souëf and Macpherson have written regarding the birds of Sydney, the type locality of the species: "The Treerunners (*Neositta chrysoptera*) are specialists on the eucalypts, feeding on the small black ants that they find on the bark. One can generally find them in the vicinity of the parks and large gardens, and they always seem very busy and in a hurry. Each

ORANGE-WINGED TREERUNNER.

flock works over a fairly large area, and the birds are sometimes not seen for weeks."

There has been little written about the life history as above recorded, and owing to the restricted range of the species there is not much technical history.

In my "Reference List" in 1912 I allowed two subspecies :

Neositta chrysoptera chrysoptera (Latham).

Queensland, New South Wales.

Neositta chrysoptera lathamii Mathews.

"Differs from *N. c. chrysoptera* in its paler coloration above and below, the under-surface being almost white (Parwan) Victoria."

Victoria, South Australia.

As both Captain S. A. White and E. Ashby have written me that they have not met with this species in South Australia, I have questioned that locality in this place, and its range in Queensland is at present unknown, probably only occurring in the south of that State. Otherwise, only the above two subspecies are yet recognised and the above arrangement is still tenable.

NEOSITTA LEUCOCEPHALA.

WHITE-HEADED TREERUNNER.

(PLATE 496, top left-hand figure.)

SITTELLA LEUCOCEPHALA Gould, Synops. Birds Austr., pt. iv., pl. (68), April 1st, 1838 : Moreton Bay, Queensland.

Sittella leucocephala Gould, Synops. Birds Austr., pt. iv., pl. (68), April 1st, 1838; *id.*, Proc. Zool. Soc. (Lond.), 1837, p. 152, Dec. 1838; *id.*, Birds Austr., pt. xxx. (Vol. IV., pl. 102), March 1st, 1848; *id.*, Handb. Birds Austr., Vol. I., p. 610, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 192, 1878; Gadow, Cat. Birds Brit. Mus., Vol. VIII., p. 361, 1883; Ramsay, Tab. List Austr. Birds, p. 15, 1888; Hall, Birds Austr., p. 36, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 339, 1901; North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 57, 1906; A. G. Campbell, Emu, Vol. VI., p. 181, 1907.

Neositta leucocephala Hellmayr, Das Tierr., 18, p. 198, 1903; Mathews, Handl. Birds Austral., p. 88, 1908; Ramsay, Emu, Vol. XIX., p. 5, 1919 (N.S.W.).

Neositta leucocephala leucocephala Mathews, Nov. Zool., Vol. XVIII., p. 379, 1912; *id.*, List Birds Austr., p. 248, 1913.

Neositta leucoptera (sic) *lumholtzi* Mathews, Austral Av. Rec., Vol. III., pt. 3, p. 61, April 7th, 1916 : Queensland (North?).

DISTRIBUTION : Queensland (Moreton Bay District) and Northern New South Wales (Clarence River).

Adult. Top of head and sides of face greyish-white with a slight indication of dark shaft-lines on the crown and nape; sides of neck, mantle, back, and rump dark brown with drab-grey margins to the feathers; upper tail-coverts white with a blackish subapical mark on many of the feathers; upper wing-coverts and flight-quills blackish-brown with pale edgings to some of the feathers and a chestnut band across the inner webs of the latter; tail also blackish-brown with smoke-white tips to the feathers; throat whitish; breast, abdomen, and sides of body greyish-white with dark shaft-streaks becoming darker and inclining to drab-grey on the lower flanks; under tail-coverts black fringed with white, more broadly at the tips; axillaries dusky-grey; under wing-coverts dark brown, greater series white; under-surface of flight-quills dark brown with a patch of chestnut; lower aspect of tail similar to its upper-surface. Eyes and feet yellow. Bill black. Total length 101 mm.; culmen 10, wing 79, tail 35, tarsus 16. Figured. Collected in Queensland and is the type of *N. l. lumholtzi*. The sexes are alike.

Adult. Fore-part of head whitish-grey with minute dark shaft-lines, becoming darker on the nape, sides of face, and sides of neck; back, rump, and scapulars dark brown with somewhat paler margins to the feathers; upper tail-coverts white with a black subapical mark on some of the feathers; upper wing-coverts and flight-quills

WHITE-HEADED TREERUNNER.

blackish-brown with pale edgings to some of the feathers and a cinnamon-chestnut band across the inner webs of the latter; tail black tipped with white, which increases in extent towards the outermost feathers; throat dusky-grey; breast, abdomen, and sides of body greyish-white with dark shaft-streaks becoming somewhat darker and inclining to drab-grey on the lower flanks; under tail-coverts white with black subterminal marks; axillaries drab-grey; lesser and median under wing-coverts blackish, the greater series white; under-surface of flight-quills dark brown with a patch of cinnamon-chestnut; lower aspect of tail similar to its upper-surface. Total length 113 mm.; culmen 11, wing 75, tail 34, tarsus 17. Collected in Queensland.

Eggs. Three eggs usually form the clutch. A clutch of three eggs taken at Duaringa, near Rockhampton, Queensland, on the 15th of October, 1898, is of a pale greyish-white ground-colour, well spotted and blotched, particularly at the larger end of each egg, with sepia and slate markings. Roundish in form, and slightly pointed towards one end; surface of shell fine, and slightly glossy. 16 mm. by 12.

Nest. Very similar to that of *N. chrysoptera* and placed in the same kind of situations.

Breeding-months. September to December.

FIVE or six species of Treerunners are admitted in the Australian Avifauna and four of these were described and named by Gould, but he knew nothing of its habits.

The present species is still one of the rarest of these birds with a very restricted range, and little more is known than when Gould wrote, although so many years have intervened.

J. Ramsay, writing on the Birds in Upper Clarence River District in the *Emu*, stated: "At camp 2 a flock of *Neosittas* was observed, several individuals of which clearly displayed the white head so characteristic of this species. Unfortunately, the only one secured was a female, but there is little doubt it is a true *leucocephala*, and that the habitat of the species may be extended into northern New South Wales." Editorial comment reads: "In his 'Nests and Eggs' Mr. A. J. North does not show New South Wales as a habitat of this species; but Dr. E. P. Ramsay does, in his 'Tabular List' (1888). It is indeed a happy coincidence that Mr. John Ramsay confirms his father's useful 'List.' The specimen that Mr. Ramsay collected, now added to H. L. White's Collection, National Museum, Melbourne, is well represented by the central figure of Gould's excellent plate of this species in *Birds of Australia*, Vol. IV."

There seems little else on record.

I described *Neositta leucoptera lumholtzi*, writing: "Differs from *N. l. leucoptera* (Gould) in having the brown bar on the inner webs of the primaries much darker. Queensland."

This was an unfortunate lapse for "*leucocephala*," as *leucoptera* was so called on account of the bar above mentioned being *white*. The specimen was collected by Lumholtz with no more precise locality than Queensland.

Order PASSERIFORMES.

No. 611.

Family SITTIDÆ.

NEOSITTA ALBATA.

PIED TREERUNNER.

(PLATE 496.)

SITTELLA ALBATA Ramsay, Proc. Zool. Soc. (Lond.), 1877, p. 351, August 1st: Bowen, Port Denison, North Queensland.

Sittella albata Ramsay, Proc. Zool. Soc. (Lond.), 1877, p. 351; *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 192, 1878; Gould, Birds New Guinea, pt. xi. (Vol. III., pl. 28), Feb. 1st, 1880; Gadow, Cat. Birds Brit. Mus., Vol. VIII., p. 362, 1883; Ramsay, Tab. List Austr. Birds, p. 15, 1888; Hall, Key Birds Austr., p. 36, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 340, 1901; A. G. Campbell, Emu, Vol. VI., p. 181, 1907.

Neositta albata Hellmayr, Das Tierr., 18, p. 199, 1903; Mathews, Handl. Birds Austral., p. 88, 1908.

Neositta leucocephala albata Mathews, Nov. Zool., Vol. XVIII., p. 379, 1912; *id.*, List Birds Austr., p. 248, 1913.

Neositta albata ramsayi Mathews, Austral Av. Rec., Vol. V., pts. 2-3, p. 36, Feb. 21st, 1923: North of Brisbane, South Queensland.

Neositta albata albata Mathews, *ib.*

DISTRIBUTION. Queensland (Port Denison to near the Brisbane District).

Adult. Very similar to the adult of *N. leucocephala*, differing principally in having the wing-bar white, not buff.

The sexes are alike.

Nest and eggs. Very similar to those of *N. leucocephala*.

To the Proceedings of the Zoological Society of London the late Dr. E. P. Ramsay contributed a "List of Birds met with in North-eastern Queensland, chiefly at Rockingham Bay." This appeared in three parts in 1875, 1876 and 1877.

In the first portion dealing with the Passerine birds he included, p. 600: "*Sittella leucocephala*. This very conspicuous species is far from being rare, and is usually met with in open forest country over the whole of Northern Queensland as far as Cooktown. Its habits and actions and nidification do

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not differ materially from those of other members of the genus. The notes of all closely resemble each other."

In the third part (p. 351), after concluding the list, he added: "I also observed that the *Sittella leucocephala*, from the neighbourhood of Port Denison, has a *white* band through the wing instead of a reddish or 'rusty-red' one, as described by Mr. Gould. In other respects it is almost exactly the same. I have only observed three specimens with this peculiarity, but am daily expecting a large series from Bowen, when I will make some further remarks, and give a fuller description of the bird; for the present I propose the name of *albata* for the Port Denison specimens, distinguished by having a *white band through the wing*, commencing on the *first primary* and *extending to the 9th quill*."

A full description was appended, but no further remarks have since appeared and recent collectors seem to have missed this species. In my "Reference List," 1912, I considered this was the northern subspecies of *N. leucocephala*, differing from it in the same way that *N. leucoptera* differs from *N. pileata*. Inasmuch as intergradation, either in coloration or range, has not been proven I allow it specific rank, so that this item may be kept well in view.

NEOSITTA PILEATA.

BLACK-CAPPED TREERUNNER.

(PLATE 497.)

SITTELLA PILEATA Gould, Synops. Birds Austr., pt. iv., pl. (68), April 1st, 1838: Swan River, West Australia.

Sittella pileata Gould, Synops. Birds Austr., pt. iv., pl. (68), April 1838; *id.*, Proc. Zool. Soc. (Lond.), 1837, p. 151, Dec. 1838; *id.*, Birds Austr., pt. xiv. (Vol. IV., pl. 104), March 1st, 1844; *id.*, Handb. Birds Austr., Vol. I., p. 612, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 192, 1878; Gadow, Cat. Birds Brit. Mus., Vol. VIII., p. 362, 1883; Ramsay, Tab. List Austr. Birds, p. 15, 1888; Hall, Key Birds Austr., p. 36, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 340, 1901; Milligan, Emu, Vol. II., p. 73, 1902 (W.A.); *id.*, *ib.*, Vol. III., p. 18, 1903 (W.A.); Carter, *ib.*, p. 91 (M.W.A.); H. E. Hill, *ib.*, p. 106 (W.A.); Milligan, *ib.*, Vol. IV., p. 10, 1904 (W.A.); Lawson, *ib.*, p. 135, 1905 (W.A.); North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 55, 1906; G. F. Hill, Emu, Vol. VII., p. 18, 1907 (Vic.); J. A. Hill, *ib.*, p. 37 (Vic.); Gibson, Emu, Vol. IX., p. 74, 1909 (W.A.); Crossman, *ib.*, p. 89 (W.A.); S. A. White, *ib.*, Vol. XII., p. 3, 1912 (S.A.); Stone, *ib.*, p. 116, 1912 (Vic.).

Sittella melanocephalus Gould, Synops. Birds Austr., pt. iv., pl. (68), April 1838: Swan River, West Australia; *id.*, Proc. Zool. Soc. (Lond.), 1837, p. 152, Dec. 1838.

Sittella tenuirostris Gould, Handb. Birds Austr., Vol. I., p. 610, note (Dec.), 1865: South Australia; Hall, Key Birds Austr., p. 36, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 342, 1901; Milligan, Emu, Vol. III., p. 114, 1903; North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 55, 1906; A. G. Campbell, Emu, Vol. VI., p. 181, 1907.

Sittella pileata subsp. *tenuirostris* Gadow, Cat. Birds Brit. Mus., Vol. VIII., p. 363, 1883.

Sittella chrysoptera var. *tenuirostris* Ramsay, Tab. List Austr. Birds, p. 15, 1888.

Neositta pileata Hellmayr, Das Tierr., 18, p. 197, 1903; Mathews, Handl. Birds Austral., p. 88, 1908; Hall, Emu, Vol. IX., p. 129, 1910 (S.A.); Whitlock, *ib.*, p. 208, 1910 (W.A.); Howe, *ib.*, p. 233, 1910 (Vic.); Carter, *ib.*, Vol. X., p. 294, 1911 (S.W.A.); Cleland, *ib.*, Vol. XII., p. 14, 1912 (Food); Wilson, *ib.*, p. 37 (Vic.); S. A. White, *ib.*, Vol. XIII., p. 30, 1913 (S.A.); *id.*, *ib.*, p. 128, 1914 (S.A.); Howe and Tregellas, *ib.*, Vol. XIV., p. 82, 1914 (Vic.); Söderberg, Kungl. Svenska Vet.



H. Grönvold, del.

Witherby & Co

NEOSITTELLA STRIATA,
(STRIATED TREERUNNER)
NEOSITTA PILEATA.
(BLACK-CAPPED TREERUNNER).
NEOSITTA LEUCOPTERA
(WHITE-WINGED TREERUNNER).

BLACK-CAPPED TREERUNNER.

Handl., Band 52, p. 99, 1918; Ashby, Emu, Vol. XX., p. 135, 1921 (W.A.); Alexander, *ib.*, p. 167 (W.A.).

Neositta tenuirostris Hellmayr, Das Tierr., 18, p. 197, 1903; Mathews, Handl. Birds Austral., p. 88, 1908.

Neositta pileata pileata Mathews, Nov. Zool., Vol. XVIII., p. 379, 1912; *id.*, List Birds Austr., p. 248, 1913.

Neositta pileata tenuirostris Mathews, Nov. Zool., Vol. XVIII., p. 380, 1912; *id.*, List Birds Austr., p. 249, 1913; S. A. White, Emu, Vol. XIV., p. 190, 1915.

Neositta pileata milligani Mathews, Nov. Zool., Vol. XVIII., p. 380, Jan. 31st, 1912: East Murchison, Mid-west Australia; *id.*, List Birds Austr., p. 248, 1913.

Neositta pileata broomi Mathews, Nov. Zool., Vol. XVIII., p. 380, Jan. 31st, 1912: Broome Hill, South-west Australia; *id.*, List Birds Austr., p. 248, 1913.

Neositta pileata whillocki Mathews, Austral Av. Rec., Vol. I., pt. 2, p. 47, April 2nd, 1912: Stirling Ranges, South-west Australia; *id.*, List Birds Austr., p. 248, 1913.

DISTRIBUTION. South and Mid-west Australia and Central and South Australia.

Adult male. Crown of head and nape black; fore-head buffy-white; lores and sides of face white, slightly tinged with drab-grey on the ear-coverts and sides of neck, somewhat deeper in colour on the latter; back, scapulars, and rump greyish-brown with dark shaft-strokes; upper wing-coverts black; flight-quills also black, with whitish tips to some of the primaries and broadly banded with bright cinnamon on both primaries and secondaries; upper tail-coverts white, the middle ones inclining to buff marked with black; tail black tipped with white, which increases in extent towards the outermost; throat, breast, and abdomen white; sides of body drab-grey; thighs coffee-brown; under tail-coverts white, or greyish-white subapically marked with black; under wing-coverts black, the greater series and edge of wing white; under-surface of flight-quills black with a patch of cinnamon; lower aspect of tail similar to its upper-surface. Eyes brown, feet yellow, bill with yellow base, shading to a dark brown tip. Total length 118 mm.; culmen 15, wing 87, tail 38, tarsus 16. Figured. Collected at Wilson's Inlet, South-west Australia, on the 10th of May, 1910.

Adult female. Top of head, nape, and sides of face deep black; hind-neck, back, and scapulars greyish-brown with dark shaft-strokes; upper wing-coverts black; flight-quills blackish-brown with a cinnamon band across the inner-webs; upper tail-coverts white, the long ones more or less marked with grey; tail black, tipped with white—more extensively on the outermost feathers; chin black with hair-like tips to the feathers; throat, breast, and abdomen white; sides of body drab-grey; thighs coffee-brown; under tail-coverts white with a subapical mark of black; under wing-coverts black, the greater series and edge of wing white; under-surface of flight-quills blackish with a patch of cinnamon; lower aspect of tail similar to its upper-surface. Eyes red-orange, orbits yellow; feet and legs chrome-yellow; bill with yellow base and purple tip. Figured. Collected at Broome Hill, South-west Australia, on the 24th of September, 1905, and is the type of *N. p. broomi*.

The female differs from the male in having the black of the head extending below the eyes.

Eggs. Three eggs usually form the clutch. A clutch of three taken at Keivell, near Murtoa, Victoria, on the 27th of September, 1894, is of a pale greyish-white ground-colour, heavily spotted and blotched, particularly at the larger end of each egg, with dark

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olive and slate markings. Roundish in form, and slightly pointed towards one end; surface of shell smooth and slightly glossy. 17 mm. by 13-14.

Nest. Similar to that of *N. chrysoptera*.

Breeding-months. August to December.

WHEN Gould received the male and female of this fine species he named them both as distinct species so that there should be no doubt of their nomination, though he was not certain that they did not represent the sexes of the same species.

Gould's notes are, of course, the earliest and are here quoted: "This species of *Sittella* enjoys a range extending over several degrees of longitude. I killed several examples during my excursion into the interior of South Australia, and I transcribe from my journal the following notes on the subject: 'I met with a flock of these birds on the hills near the source of the River Torrens, about forty miles northward of Adelaide; they were about thirty in number and were extremely shy, keeping on the topmost branches of the trees, and the whole company flying from tree to tree so quickly that I and my companion were kept at a full run to get shots at them.' The following is from Gilbert's notes made in Western Australia: 'An extremely active bird, running up and down the trunks and branches of the trees with the utmost rapidity, always in families of from ten to twenty in number. It utters a weak piping note while on the wing, and occasionally while running up and down the trees. Its flight, which is generally performed in rather rapid undulating starts, is of short duration.' Prior to my visit to Australia, I regarded, described, and named the two sexes of this bird as distinct species, an error which the opportunity I subsequently had of observing the bird in a state of nature and of dissecting recent specimens has enabled me to correct: the black-headed specimens proving to be females, and those with a black cap only, males."

Mr. Tom Carter's notes read: "Is a fairly common species through the south-west, and about Broome Hill. At the latter locality recently fledged young were seen on October 8th, 1912, evidently having just left the nest. On April 9th, 1910, there appeared to be a considerable local migration (!) of these birds, because in the course of a six mile drive from my house 'Wensleydale' to the township many small parties of them were observed in timber alongside the road, and in the ordinary way I could drive that way perhaps twenty times and not see a single one of these birds."

Milligan wrote from the Margaret River district, South-west Australia: "I saw several companies of these birds on the first trip, and as they were in companies I assumed they had not begun to nest." Later he added:

BLACK-CAPPED TREERUNNER.

"*Sittella tenuirostris* (Gould). I have to report the occurrence of this species in Western Australia. Mr. Fred Lawson forwarded to the Perth Museum several skins which he procured in the Murchison district. I think it is quite distinct from *S. pileata* and entitled to rank as a subspecies."

I also quote here a further note by Milligan: "Recently, whilst examining the skins of our Museum relating to the Certhiidae, I was surprised to find three skins of *Sittella leucoptera*, obtained, as the labels disclosed, at the Blackwood River, in the southern portion of Western Australia. As the species is regarded as a purely tropical form, I, from motives of abundant caution, determined to await the return of Mr. J. T. Tunney (who collected them) from Northern Australia, and receive confirmation of the notes on the label before publishing the record. Mr. Tunney, having now returned, confirms the notes."

Ashby has recently written: "Black-capped Treerunner. Found on the sand plains at Watheroo. They are slightly lighter in colour than South Australian specimens, and have considerably less white on the head and under-side than is the case with a skin from Lake Austin, West Australia, that is labelled *N. tenuirostris* (Slender-billed Treerunner); but age might account for the difference. There is no material difference in the bills."

The bird Milligan determined as *S. tenuirostris* above I named *N. p. milligani* as hereafter shown, but the Blackwood birds need confirmation by further collecting at that region as all the recent records have been of the *pileata* (NOT *leucoptera*) forms, and a mistake in locality seem certain.

Captain S. A. White wrote me "*N. p. tenuirostris*. This is a widely distributed bird, being found in the heavy timbered country near the coast, open-timbered and grassland country, she-oak country, and over the vast interior where mulga scrubs prevail. It is a very lively and active bird, moving about in parties from two or three to a dozen or more, descending the trees head downwards searching every crevice and hole for insect life, then off to another tree, all following the first to fly and uttering a very sharp, quickly repeated note while on the wing. Nests in August, September and October, building a wonderful nest of cobwebs and soft bark, attaching pieces of bark to the outside so cunningly that the nest, which is placed in an upright fork, is most difficult to detect."

Mr. J. W. Mellor writes: "This bird is to be found in various parts of South Australia and in the interior of the State, and I have seen it on Eyre Peninsula, South Australia. It always goes about in small companies of four or five; when one flies off, the others invariably fly off after it and follow the leader until the next settling place is reached, when all collect again and search about the bushes and trees for their insect food upon which they solely subsist."

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They have a peculiar way of searching about the trunks of the rough-barked trees, in coming downwards around and around the stem, diligently spying beneath the loose pieces of bark and into the cracks and crevices for any spider or insect that may be secreted. They love the rough stony ridges of mountain ranges, especially where the she-oak (*Casuarina*) grows, and it has been in these trees that I have always found their nests, which are extremely hard to locate. The nest is always placed in the upright fork of the tree, built of small strips of bark and fibre, firmly woven together with spider-web and cocoon, forming a neat little cup and well shapen into the fork of the tree, so as to merely appear a thickened joint; then for the outside the birds select little pieces of elongated bark of the she-oak tree and sticks these firmly on to the nest, all in a longitudinal way, the same as the bark of the tree itself, so that when it is finished it is almost impossible to detect the nest, save when the bird is sitting; and it was in this way I found those I have. Several of the covey assist in building the nest, but I think that only one hen lays in it, while both male and female sit on the eggs during incubation. I found a nest in course of construction on the Coorong and marked the place very particularly, but upon revisiting the place the nest had been removed and I could not find the new place. They seem very wary birds in this respect and do not like their nesting-site to be discovered, hence their desire completely to hide its whereabouts by deceptive methods."

Mr. Sandland wrote me: "Odd families seen. Have only found one nest at which four birds were busily engaged. On my return four days later there was no sign of the nest and, as it had not been stormy, I concluded they must have moved it after I looked into it."

Mr. Edwin Ashby's notes read; "Not uncommon in the Mount Lofty Hills, South Australia. I also found it numerous near Perth, West Australia. The birds of this genus run about the boughs of a tree, especially she-oak (*Casuarina*), like a mouse, being as much at home upside down on the underside of a bough as on the upper. The nest is a masterpiece, being made often to match exactly the broken end of a bough, being simply an extension of the broken end. It would be impossible to find but for the movements of the parent bird. Except during the period of incubation these birds go in flocks and usually only stay a short time in a clump of trees, soon passing on to the next clump."

Mr. F. E. Howe wrote: "Met with this bird at Stawell, Carina and Kow Plains. During our trip to the latter locality we were interested by the actions of a small family as they fed in the trees above the spot we had selected for lunch."

Mr. A. G. Campbell has noted that he "took a nest at Nhill, Victoria, containing five eggs, which could be divided into two sets of three and two, obviously laid by different females."

BLACK-CAPPED TREERUNNER.

G. F. Hill, writing of the birds of the Ararat district, Victoria, stated : "A rather uncommon bird. The nests are built in upright forks of dead branches and covered with small pieces of bark of the colour of the branch. Gum (This is a secretion from the mouth of the bird—Eds.) is used freely in the construction of the nests, both to stick the foundation to the branches and to attach the small pieces of bark to the outside. At least four birds assist in the building of a nest."

J. A. Hill from Kewell, Victoria, wrote : "I have observed both the male and female of the Black-capped Treerunner taking part in incubation. We only have the one species in our district, and they are very peculiar in their habits. They generally go in small flocks of eight or ten, and I have never seen more than one nest in connection with one flock. More than one pair (possibly the whole flock) help to build the nest. They often remove their nest when built ; I have watched them on different occasions pull the nest to pieces and remove it about 100 yards or more, for reasons best known to themselves. The nest is often finished for two or three weeks before they commence to lay eggs, but this is not always the case. Only the one pair feed the young ones, as far as I have been able to observe."

Stone, concerning the birds of Lake Boga, Victoria, confirmed this : "Not uncommon. Builds a beautiful nest, which is a perfect mimicry of its surroundings. Very suspicious, and I have known them make six several attempts to build a nest, to be forsaken until the sixth time. Maximum, three eggs."

Howe, Wilson and Tregellas have all noted this species in the Victorian Mallee, and S. A. White from many parts of South Australia, but very little is recorded of its habits and I have no notes of its occurrence in New South Wales, although it probably does occur in the south-west part ; indeed, it is quite possible that Captain Sturt's specimens which Gould named *tenuirostris* might have been procured within the borders of that State.

In his "Handbook" under the article *Sittella chrysoptera*, Gould added : "I possess a somewhat mutilated specimen of a *Sittella*, which was given to me by Captain Sturt, but I am unaware of the locality in which he obtained it. This bird, which I feel assured is a new species, is very nearly allied to *S. chrysoptera*, but differs from it in having a longer and more upturned bill, the base of which is yellow, and a uniformly coloured back and breast without apparently any trace of the brown striæ seen on the feathers of those parts in *S. chrysoptera* ; in other respects, particularly in the chestnut coloured band across the wings, it is very similar to that species. If it should hereafter prove to be new, I would propose for it the specific name of *tenuirostris*."

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This specimen was given by Gould to the British Museum, and when Gadow wrote the volume of the *Catalogue of Birds in the British Museum* dealing with these birds he determined the specimen as a variety of *S. pileata*. Later Ramsay demurred, writing: "This is a somewhat doubtful species, and Dr. Hans Gadow, who has presumably examined the type from Gould's collection, has made it still more doubtful by placing it as identical with *S. pileata* (Gould). As I have specimens agreeing very well with Mr. Gould's description, from the interior provinces, obtained by Mr. James Ramsay, I prefer to consider it more nearly allied to *S. chrysoptera* than to any other."

Milligan then recorded a form from West Australia under Gould's name, but on the preparation of my "Reference List" I concluded: "Note.—The type of *S. tenuirostris*, which I have examined, was procured by Captain Sturt, and is a young long-billed aberration. The name must be used for the South Australian race, which is characterised by its duller head, smaller size, and more spotting on the upper-surface, but the slender bill is not constant. Indeed, this feature is more constant in the East Murchison race, as pointed out by Milligan."

In that "Reference List" I included the forms of *leucoptera* as subspecies of *pileata*, but omitting those, four true *pileata* subspecies were recognised:

Neositta pileata pileata (Gould).

(Swan River) West Australia.

Neositta pileata tenuirostris (Gould).

South Australia, adjoining parts of Victoria.

Neositta pileata milligani Mathews.

"Differs from *N. p. pileata* in its smaller size and much paler coloration. East Murchison, West Australia."

Mid Australia.

Neositta pileata broomi Mathews.

"Differs from *N. p. pileata* in its paler coloration, and from *N. p. tenuirostris* in its more distinctly spotted upper-surface. Broome Hill, West Australia."

South-west Australia.

The reconsideration of these forms a little later necessitated the addition of

Neositta pileata whitlocki Mathews.

"Differs from *N. p. broomi* in its lighter coloured back, but not so pale as *milligani*. Stirling Ranges, South-west Australia."

These five forms were recognised in my 1913 "List."

NEOSITTA LEUCOPTERA.

WHITE-WINGED TREERUNNER.

(PLATE 497.)

SITTELLA LEUCOPTERA Gould, Proc. Zool. Soc. (Lond.), 1839, p. 144, March 1840 : North-west Coast of Australia=Port Essington, Northern Territory.

Sittella leucoptera Gould, Proc. Zool. Soc. (Lond.), 1839, p. 144, 1840 ; *id.*, Birds Austr., pt. XIV. (Vol. IV., pl. 103), March 1st, 1844 ; *id.*, Handb. Birds Austr., Vol. I., p. 611, 1865 ; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 192, 1878 ; Gadow, Cat. Birds Brit. Mus., Vol. VIII., p. 363, 1883 ; Ramsay, Tab. List Austr. Birds, p. 15, 1888 ; Hall, Key Birds Austr., p. 36, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 343, 1901 ; Hall, Emu, Vol. II., p. 53, 1902 (N.W.A.) ; (?) Milligan, *ib.*, Vol. III., p. 233, 1904 (S.W.A.) ; A. G. Campbell, *ib.*, Vol. VI., p. 182, 1907 ; (?) Broadbent, *ib.*, Vol. X., p. 239, 1910 (N.Q.).

Neositta leucoptera Hellmayr, Das Tierr., 18, p. 198, 1903 ; Mathews, Handl. Birds Austral., p. 88, 1908 ; *id.*, Emu, Vol. IX., pp. 12-62, 1909 (N.W.A., N.T.) ; G. F. Hill, *ib.*, p. 282, 1911 (N.W.A.) ; H. L. White, *ib.*, Vol. XIII., p. 186, 1914 (eggs) ; Barnard, *ib.*, p. 209 (N.T.) ; *id.*, *ib.*, Vol. XIV., p. 48, 1914 (N.T.) ; North, Austr. Mus. Spec. Cat. No. 1, Vol. IV., p. 432, 1914 ; H. L. White, Emu, Vol. XVI., p. 226, 1917 (N.T.) ; Campbell, *ib.*, Vol. XVIII., p. 184, 1919 (N.T.).

Neositta mortoni North, Ibis, 1912, p. 118, Feb. 7th : Port Essington, Northern Territory ; *id.*, Emu, Vol. XII., p. 53, 1912 ; Macgillivray, *ib.*, Vol. XIII., p. 174, 1914 (N.Q.).

Neositta pileata leucoptera Mathews, Nov. Zool., Vol. XVIII., p. 380, 1912 ; *id.*, List Birds Austr., p. 249, 1913.

Neositta pileata rogersi Mathews, Nov. Zool., Vol. XVIII., p. 380, Jan. 31st, 1912 : Mungi, (interior) North-west Australia ; *id.*, List Birds Austr., p. 248, 1913.

Neositta pileata subleucoptera Mathews, Nov. Zool., Vol. XVIII., p. 380, Jan. 31st, 1912 : Alexandra, Northern Territory ; *id.*, List Birds Austr., p. 249, 1913.

Neositta pileata melvillensis Mathews, Austral Av. Rec., Vol. I., pt. 2, p. 47, April 2nd, 1912 : Melville Island, Northern Territory ; *id.*, List Birds Austr., p. 249, 1913.

Neositta pileata broomei Mathews, Austral Av. Rec., Vol. I., pt. 4, p. 95, Sept. 18th, 1912 : Napier Broome Bay, North-west Australia.

Neositta pileata napieri Mathews, Austral Av. Rec., Vol. II., pts. 2-3, p. 68, Oct. 23rd, 1913 : new name for preceding, which is not *N. p. broomi* Mathews, Nov. Zool., Vol. XVIII., p. 380 (Jan. 31st), 1912 ; *id.*, List Birds Austr., p. 249, 1913 ; *id.*, South Austr. Orn., Vol. 3, p. 179, 1918.

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DISTRIBUTION. Northern Australia from Derby and Napier Broome Bay in the North-west to Alexandra, Eastern Northern Territory, and into Queensland (Cloncurry).

Adult male. Crown of head and nape black; hind-neck, mantle, back and scapulars drab-grey with dark shaft-streaks; upper tail-coverts white; upper wing-coverts black; outer aspect of flight-quills black with a band of white, chiefly across the inner-webs; tail black tipped with white more narrowly on the middle feathers; fore-head, lores, a line over the eye, sides of face, sides of neck, throat, breast, and upper abdomen white; axillaries, sides of body, and lower abdomen drab-grey; thighs blackish; under tail-coverts white subapically marked with black; under wing-coverts black; edge of wing and greater series white; under-surface of flight-quills blackish-brown with a patch of white; lower aspect of tail similar to its upper-surface. Eyes and feet yellow, bill with yellow base and black tip. Total length 114 mm.; culmen 13, wing 82, tail 35, tarsus 17. Figured. Collected at Napier Broome Bay, North-west Australia, on the 24th of February, 1910.

The sexes of this bird are very similar to those of *N. pileata*, differing principally in having the wing-bar *white*, not buff.

Female differs from the male in having the black of the head extending below the eyes.

Eggs. Three eggs form the clutch, and appear to be the smallest laid by the genus. A clutch of three eggs taken at Borroleola, Macarthur River, Northern Territory, on the 11th of November, 1913, is of a pale greyish-white ground-colour, spotted and speckled with dark olive and slate markings, which become confluent towards the larger end of each egg. Ovals in shape; surface of shell smooth and rather glossy. 15-16 mm. by 12.

Nest. Similar to that constructed by other species of the genus. The nest from which this clutch of eggs was taken, was a beautiful little cup-shaped structure, composed of bits of bark and cobwebs woven together in an upright fork of a Coolibah tree.

Breeding-months. August to December. (June, July.)

GOULD described this beautiful bird as a distinct species on account of the white inner lining of the wings, and recently it was reduced to subspecific rank; but I am now inclined to agree with the majority of Australian ornithologists that it would be better to treat it as a representative species rather than a subspecies.

Gould wrote: "The present bird, which is a native of the northern parts of Australia, is a perfect representative of the *Sittella chrysoptera* of the south coast, to which species it is most nearly allied. The contrasted style of its plumage, together with the white spot on the wings, sufficiently distinguish it from every other species of the genus yet discovered. It is found in the Cobourg Peninsula, but is nowhere very abundant; it moves about in small families of from four to twelve in number. Its note, actions, and general habits are precisely similar to those of the other members of the genus. The sexes differ from each other in the markings of the head; the male has the summit only black, while the female has the whole of the head and ear-coverts of that colour."

WHITE-WINGED TREERUNNER.

Mr. J. P. Rogers has written : " At Marngle Creek only four small flocks were seen, while at Mungi they were rare. In most timbered localities in West Kimberley these birds are fairly numerous."

From Melville Island Rogers wrote : " Coopers' Camp, Nov. 20th, 1911. This species is rare here. I have only seen three or four small parties and these were usually in the tops of tall trees. On the north side of the island none were seen, and recrossing the island to the south again I crossed a lot of likely country but saw none. At Coopers' Creek again on Jan. 20th, 1912, two small parties were seen. The parties seen at the island were small, never more than five or six birds. At Derby flocks of twenty were common and the usual number was about ten or twelve."

G. F. Hill wrote : " A somewhat rare bird (in Kimberley), generally seen in small flocks of six or eight. The nesting season appears to be in June, in which month several partly built nests were found near the Drysdale River."

While my " Reference List " was being printed, North sent to England a description of a new species, *Neositta mortoni*, collected at Port Essington, Northern Territory, which he concluded differed from birds collected at Derby, North-west Australia, and which agreed with birds from Cloncurry, Queensland.

In my " Reference List," which was published the week before North's new species, I had ranged the White-winged Treerunners as forms of the Black-headed Treerunner and admitted

Neositta pileata leucoptera (Gould).

North-west Australia (Coast)

giving Derby as type locality even as North had independently done.

Neositta pileata rogersi Mathews.

" Differs from *N. p. leucoptera* in its paler coloration above. Mungi, North-west Australia."

North-west Australia (Interior).

Neositta pileata subleucoptera Mathews.

" Differs from *N. p. rogersi* in being paler still and larger. Alexandra, Northern Territory."

Northern Territory.

Shortly afterwards I received birds from Melville Island and named these

Neositta pileata melvillensis.

" Differs from *N. p. leucoptera* in its shorter, thicker bill " and added

Neositta pileata mortoni North

as the name for the Port Essington bird.

However, when Witmer Stone examined the Gould collection in Philadelphia all the birds were labelled Port Essington, and it will be noted above that Gould only gave " Cobourg Peninsula " as its habitat, so that North's name became

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an absolute synonym of Gould's *leucoptera*. This is one of the many cases where Gould's North-west Australia proves to be Port Essington, a point that should be borne in mind.

I therefore distinguished

Neositta pileata broomei.

"Differs from *N. p. leucoptera* (from Port Essington) in having the centre of the feathers of the back very much darker and the rump whiter. Napier Broome Bay, North-west Australia."

I unfortunately overlooked the fact that I had used this name just a little previously for a southern form, so had to rename it

Neositta pileata napieri.

Consequently in my 1913 "List," where I still regarded these birds as forms of *pileata*, I ranged

Neositta pileata rogersi Mathews.

Interior of North-west Australia.

Neositta pileata napieri Mathews.

North-west Australia (Coastal Districts).

Neositta pileata leucoptera Gould.

Western Northern Territory.

Neositta pileata melvillensis Mathews.

Melville Island, Northern Territory.

Neositta pileata subleucoptera Mathews.

Eastern Northern Territory.

Macgillivray, under the name *Neositta mortoni*, wrote: "This is the common *Sittella* throughout the Gulf country, and will probably be found to be identical with *N. magnirostris* of Ingram, described from a cattle station a little westward of the Gulf country." This is a little difficult to understand, as when North described his *Neositta mortoni* from Port Essington he claimed it differed from Cloncurry birds of the *leucoptera* style, while Ingram's *N. magnirostris* is a form of *N. striata*, a different species altogether.

Again, Campbell has recently recorded "*Neositta leucoptera* Gould. One ♂, one ♀, one not sexed. Port Essington birds are darker in general coloration than those from North-west Australia, Gould's type locality (P.Z.S. 1839, p. 144), and which latter birds Mathews has named *napieri* (*broomei*) (A.A.R., I., p. 95); but females are usually darker in this species than the males. In the specimen 'not sexed' the black on the head extends below the sides of the face to the chin. Macarthur River and Brunette Downs examples are typical. Wing 77-81 mm. The R.A.O.U. 'Check-List' probably correctly separates, specifically, this white-winged bird from the black-capped, brown-winged *N. pileata*."

WHITE-WINGED TREERUNNER.

I am now inclined to agree with the last sentence, and here again note Milligan's record of *N. leucoptera* from the Blackwood River, South-west Australia, which does not seem in order and needs confirmation by recent collecting.

The forms would now be named

Neositta leucoptera leucoptera (Gould).

Northern Territory.

Of this *N. murtrei* North is a synonym as shown above.

Neositta leucoptera melvillensis Mathews.

Melville Island, Northern Territory.

Neositta leucoptera subleucoptera Mathews.

Eastern Northern Territory and Western
Queensland.

Neositta leucoptera napieri Mathews.

North-west Australia in the Coastal districts.

Of this *N. l. broomei* Mathews is a synonym.

Neositta leucoptera rogersi Mathews.

Interior of North-west Australia.

More material is necessary accurately to limit the ranges of the forms.

GENUS—NEOSITTELLA.

NEOSITTELLA Mathews, Austral Avian Record, Vol. I,
pt. 5, p. 114, Dec. 24th, 1912. Type (by original
designation) *Sittella striata* Gould.

I WROTE at the introduction of this genus : “ Differs from *Neositta* in its shorter
stouter bill and weaker legs and feet, and shorter wing with comparatively
longer first primary.”

While this might be justly regarded as of subgeneric value only, I keep
it separate here so that its relationship can be kept in view. Even in habits
this group shows differences from the other members and it has the most
northern range.

NEOSITTELLA STRIATA.

STRIATED TREERUNNER.

(PLATE 497.)

SITTELLA STRIATA Gould, Birds Austr., Suppl., pt. v., Aug. 1st, 1869: Cape York, Queensland.

Sittella striata Gould, Birds Austr., Suppl., pl. 54 (pt. v.), Aug. 1st, 1869; *id.*, Ann. Mag. Nat. Hist., Ser. IV., Vol. IV., p. 110, Aug. 1st, 1869; Ramsay, Proc. Zool. Soc. (Lond.), 1875, p. 599, 1876; *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 192, 1878; Gadow, Cat. Birds Brit. Mus., Vol. VIII., p. 364, 1883; Ramsay, Tab. List Austr. Birds, p. 15, 1888; Le Souëf, Ibis, 1896, p. 314; Hall, Key Birds Austr., p. 36, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 343, 1901; Le Souëf, Emu, Vol. II., p. 91, 1902 (N.Q.); Berney, *ib.*, Vol. V., p. 75, 1905; A. J. Campbell, *ib.*, Vol. VI., p. 15, 1906; A. G. Campbell, *ib.*, p. 181, 1907; Berney, *ib.*, Vol. VII., p. 81, 1907; Broadbent, *ib.*, Vol. X., p. 239, 1910.

Neositta striata Hellmayr, Das Tierr., 18, p. 198, 1903; Mathews, Handl. Birds Austr., p. 88, 1908; Barnard, Emu, Vol. XI., p. 28, 1911; Macgillivray, *ib.*, Vol. XIII., p. 175, 1914; Campbell and Barnard, *ib.*, Vol. XVII., p. 29, 1917; Macgillivray, *ib.*, p. 203, 1918.

Neositta magnirostris Ingram, Bull. Brit. Orn. Club, Vol. XXI., p. 99, May 30th, 1908: Inkerman, Queensland; *id.*, Ibis, 1908, p. 473, pl. ix.

Neositta striata striata Mathews, Nov. Zool., Vol. XVIII., p. 381, Jan. 31st, 1912.

Neositta striata rothschildi Mathews, *ib.*: Cairns, Queensland; *id.*, South Austr. Orn., Vol. 2, pt. 3, p. 58, 1915.

Neositta striata magnirostris Mathews, *ib.*

Neosittella striata striata Mathews, List Birds Austr., p. 249, 1913.

Neosittella striata rothschildi Mathews, *ib.*

Neosittella striata magnirostris Mathews, *ib.*, p. 250.

DISTRIBUTION. Queensland only, from Cape York southwards to Inkerman.

Adult male. Crown of head and nape black; lores and fore-head whitish; back and scapulars smoke-grey with narrow blackish shaft-lines; upper tail-coverts white; upper wing-coverts blackish-brown with pale minute tips to the lesser and median series and pale fringes on the greater ones; flight-quills blackish-brown with pale tips and a band of white across the inner-webs and on the outer ones of some of

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the primaries, which indicates a wing-speculum; tail blackish with white tips to the feathers; sides of face, chin, and throat whitish dotted with pale brown; breast and abdomen whitish with dark shaft-streaks; sides of body similar but somewhat darker; thighs coffee-brown; under tail-coverts white subapically marked with black; axillaries drab-grey; under wing-coverts black, becoming white on the greater series; under-surface of flight-quills dark hair-brown with a patch of white towards the base; lower aspect of tail similar to its upper-surface but rather paler. Eyes and feet yellow, bill yellow with black tip. Total length 105 mm.; culmen 13, wing 77, tail 33, tarsus 15. Figured. Collected at Cape York, North Queensland, on the 16th of December, 1912.

Adult female. Crown of head, sides of face, sides of neck, hind-neck, fore-head, lores, chin, throat, and upper-breast uniform black; back and scapulars smoke-grey with wide blackish shaft-lines; upper tail-coverts white with dark narrow shaft-streaks to some of the feathers; upper wing-coverts soot-black; flight-quills dark brown with a band of white across the inner webs, which extends to the outer webs of some of the outer primaries; tail black with narrow white tips to the feathers; lower breast, sides of breast, abdomen, and flanks whitish with blackish shaft-lines; under tail-coverts white subapically marked with black; axillaries drab-grey; under wing-coverts black becoming white on the greater series; under-surface of flight-quills dark hair-brown with a patch of white; lower aspect of tail somewhat paler than its upper-surface, otherwise similar. Eyelids, eyes and feet yellow, bill yellow with black tip. Total length 103 mm.; culmen 10, wing 75, tail 33, tarsus 15. Figured. Collected at Cape York on the 10th of December, 1912. The female differs in having the entire head black.

Immature male. Crown of head blackish with whitish tips to the feathers; lores and sides of face also blackish but almost uniform; back and scapulars dark soot-brown, the tips of the feathers greyish-white; upper wing-coverts also soot-brown, but darker than the back, with pale tips to the median and greater series; bastard-wing, primary-coverts, and flight-quills blackish, with white bases and pale tips to the last; outer edge of wing dull white; upper and under tail-coverts grey with blackish shaft-lines to the feathers; tail blackish tipped with white; throat and under-surface of body pale grey with dark brown shaft-lines to the feathers, marginal under wing-coverts dark brown; base of flight-quills below white, the terminal portion dark brown; lower aspect of tail similar to its upper-surface. Eyes brown, feet pale (straw) yellow. Collected on the Barron River, near Cairns, North Queensland, on the 6th of May, 1912.

Immature male. Crown of head, sides of face, hind-neck, sides of neck, back and scapulars dusky-brown with greyish-white tips to the feathers; rump and upper tail-coverts cream-white; upper wing-coverts blackish with buffy-white tips; outer edge of wing whitish; primary-coverts uniform blackish; flight-quills also blackish with a broad white patch across the middle portion, chiefly on the inner-webs, and whitish tips to the feathers; tail-feathers black tipped with white; throat and fore-neck cream-white; breast, abdomen, sides of body, and under tail-coverts fawn-grey; thighs dusky-brown; under wing-coverts and under-surface of flight-quills blackish-brown with a patch of white on the latter; lower aspect of tail blackish tipped with white. Eyes brown, feet yellow, upper mandible black, lower light brown. Collected on the Barron River, near Cairns, North Queensland, on the 8th of July, 1911.

Immature. Crown of head, hind-neck, sides of neck, back and scapulars dusky-brown with whitish tips to the feathers; upper wing-coverts blackish with pale tips to the lesser, median, and greater series; primary-coverts almost uniform black with a very small pale speck at the tips; flight-quills also black with pale margins at the tips, and

STRIATED TREERUNNER.

a white bar across the primaries, chiefly on the inner-webs ; some of the innermost secondaries like the back ; rump and upper tail-coverts white ; tail black with white tips to the feathers ; sides of face similar to the sides of the neck ; chin, throat, cheeks and fore-neck white ; breast, abdomen, sides of body, and under tail-coverts pale ash-grey with dark shaft-streaks to the feathers ; axillaries uniform-grey ; under wing-coverts blackish with white tips to the greater series ; under-surface of flight-quills blackish-brown with a white patch across the middle portion ; lower aspect of tail similar to its upper-surface but somewhat paler. Eyes greyish-brown, feet very pale yellow, upper mandible black, lower lighter. Collected on the Barron River, near Cairns, North Queensland, on the 14th of October, 1912.

Immature male. General colour of the upper-surface smoke-brown with pale tips to the feathers, including the top of the head, sides of the face, sides of neck, hind-neck, back, and scapulars, some of the feathers on the top of the head darker and inclining to blackish : lesser and median upper wing-coverts dark brown with whitish tips to the feathers ; bastard-wing and greater series blackish-brown more or less fringed with whitish at the tips ; primary-coverts and flight-quills blackish with a band of white across the primaries, chiefly on the inner-webs and somewhat paler at the tips ; rump and upper tail-coverts isabelline-white ; tail-feathers blackish broadly margined with white on the lateral ones ; lores and a line over the eye whitish ; ear-coverts like the back ; chin and throat whitish with black centres to the feathers ; breast isabelline with blackish shaft-lines to the feathers ; abdomen, sides of body, and under tail-coverts similar but without the dark shaft-lines ; axillaries and under wing-coverts dusky-brown, becoming whitish on the greater series ; under-surface of flight-quills dark brown with a patch of white across the middle ; lower aspect of tail similar to its upper-surface. Feet, eyes and eyelids yellow. Bill yellow with black tip. Collected at Normanton, North Queensland, on the 24th of November, 1913.

Nest. "Composed almost entirely of elongated pieces of bark and cobwebs, lined with the same material ; it is a deep cup-shaped structure and the outside covered with those pieces of bark makes it look like part of the bough on which it is built. It has an internal depth of $1\frac{1}{2}$ inch, external 3 inches ; internal diameter $1\frac{1}{2}$ inch, external 2 inches." (Le Souëf.)

Eggs. "Clutch three. White, and lightly marked towards the smaller end with large, dark, slate-coloured markings, varying in intensity ; at the larger end they are confluent, but do not form a zone. 17-18 mm. by 13." (*ib.*)

Breeding-season. August to December.

THIS very distinct form of Treerunner also fell to the lot of Gould to describe, but he had no field-notes to record.

A few years later Ramsay wrote "*Sittella striata*. I mentioned this species as the young of *S. leucoptera* in P.Z.S., 1868, p. 387, where a mistake in the description occurs, the word *upper-surface* should have been *under-surface*, as the text will show. It is plentifully distributed over the whole Rockingham Bay district, and regarded by the aborigines there as sacred and as having had something to do with their first coming to that part of the country. This species seems to be more active than other *Sittellæ* I have met with. They are usually found in small troops, and seem in a hurry, hopping quickly over the

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trunks, stems, and branches of the trees, oft-times head downwards, creeping round and round the limbs, stopping only to disengage some insect from the bark, and calling to each other in a mournful monotonous cry; they fly off to repeat the same actions on some other tree. They move along the forest at no mean pace, usually going in a direct line. The nest, like that of *S. chrysoptera*, is placed in an upright and usually dead fork of some high branch; it is made of fine strips of bark with a large quantity of spiders' webs, with which small scales of bark, resembling that of the branch in which it is placed, are felted on so carefully as hardly to be detected even at a comparatively short distance; the rim is very thin, the nest open above and very deep."

Berney has recorded from the Richmond District, North Queensland: "Not to be seen very frequently. Its visits, generally in small parties of eight or thereabouts, do not appear to be confined to any one season of the year. Its feet are large for the size of the bird, but eminently adapted for running up or down the rough bark of trees. The peculiarly shaped bill, too—long and narrow, with a slight dip in the culmen—is beautifully suited for searching out insects in crevices. It hunts the foliage as well as the trunks, and on the latter is just as much at home running head downward as going up."

A. J. Campbell added: "Mr. F. L. Berney has forwarded me a specimen of a black-headed bird which he carefully dissected and proved to be a female. Therefore the descriptions of the sexes given in the *Cat. Birds Brit. Mus.* must be transposed. Mr. Berney has observed this *Sittella* breeding in March."

Barnard wrote "Observed on several occasions running up and down the trees in forest country. None found breeding."

Macgillivray added little more: "This is the Cape York bird. It is more frequent down the telegraph line from the 16-mile point to the Jardine River, in the tall bloodwood and stringy-bark forest."

Campbell recorded the species from the Cardwell district, but instead of giving field-notes, wrote about the citation by Broadbent and Ramsay of *N. leucoptera* for this district, ignorant of the fact that the latter had corrected his error and given field-notes of the species as above quoted. As to Broadbent's record it may be noted that he gave two species, and at the time the paper was published in the *Emu* the editors (one of which was Campbell himself) gave a footnote which reads: "These notes were made during a collecting tour undertaken by Mr. Broadbent from August, 1888, to March, 1889. The somewhat belated paper by the veteran collector is none the less valuable because the collection therein detailed is in the Queensland Museum, and available for reference for students and others." It is now necessary for Campbell himself to refer to the collection and publish the facts in connection with Broadbent's determination as above queried.

STRIATED TREERUNNER.

This rare bird was described by Gould from the Cape York Peninsula, and forty years after Collingwood, Ingram introduced

Neositta magnirostris.

"Differs from *N. striata* in its generally larger size, and especially in its longer and more massive bill, the average length of the culmen being 0.63 in., as compared to 0.53 in. The bill is also considerably darker, being brownish-black for at least three-fourths of its length, and cream-coloured only at the extreme base like that of *N. pileata*. In *N. striata* the blackish marks are confined to the anterior third or half of the bill, chiefly on the upper and lower edges, the remaining area being lemon-yellow. The back is noticeably greyer than in the last mentioned bird, while the under-parts are not so distinctly, or so heavily striated, especially towards the centre of the breast and abdomen, which are also of a purer white. The black head of the female and crown of the male lack the brownish tinge noticed in *N. striata*. Average measurements: culmen, 0.65 in., wing 3.3, tail 1.5, tarsus 0.7.

Inkerman district, Queensland.

When I prepared my "Reference List" I reduced this to subspecific rank and added another subspecies thus:

Neositta striata striata (Gould).

North Queensland (Cape York).

Neositta striata rothschildi Mathews.

"Differs from *N. s. striata* in being larger—wing 82 mm., typical birds 75 mm.—and from *N. s. magnirostris* in being paler. Cairns, Queensland.

North Queensland (Cairns).

Neositta striata magnirostris Ingram

Queensland (Inkerman).

With reference to the genus *Neosittella* this subdivision was maintained unchanged in my 1913 "List."

FAMILY—CLIMACTERIDÆ.

GENUS—CLIMACTERIS.

CLIMACTERIS Temminck, Manuel d'Orn.,
 2nd ed., Vol. I., p. LXXXV., Oct. 21st,
 1820. Type (by subsequent designation) Gray, List Genera Birds,
 p. 18, 1840 *Climacteris picumnus* Temminck.

Also spelt—

Climateris Ranzani, Elem. di Zool., Vol. III., pt. III., p. 24, April 3rd, 1822.

Neoclima Mathews, Austral Avian
 Record, Vol. I., pt. 5, p. 115,
 Dec. 24th, 1912. Type (by original
 designation) *C. picumnus* Temminck.

AUSTRALIAN Treecreepers are superficially quite like Palæarctic Treecreepers and ought to form a family Climacteridæ, quite apart from the Certhiidæ, with which they may prove to have little in common when anatomical investigation is undertaken. Years ago Newton pointed out that the reference of these Creeper-like birds to the family Certhiidæ was probably incorrect.

The tarsal covering is peculiar, consisting of two plates only, complete in front and behind, and therefore quite unlike the majority of Old World Passerine forms, which have the hinder aspect of the tarsus covered with two plates, hence the term bilaminate. The meaning of this peculiar covering is at present unknown to me, but obviously it must be of high value, and so I use the family name Climacteridæ to emphasize this item. The members are small Creeper-like birds with short, thin, curved bills, long wings, long tails with soft feathers, and short legs and feet with long hind-toe.

The bill is nearly as long as the head, thin and curved with the tip sharp but not hooked; though slender it shows a little lateral compression with a slight but noticeable expansion basally, the edges of the upper mandible extending over those of the lower one; there is a short deep nasal groove, the nostrils strongly operculate as linear slits, the culmen not showing any keel; rictal and nasal bristles obsolete; the under-mandible is slightly decurved from the narrow feathered interramal space, the gonys a little more than half the length of the bill.

CLIMACTERIDÆ.

The wings are long, the first primary short, about half the length of the second, which is equal to the fifth, and these are little less than the third and fourth which are longest; the eighth and ninth are comparatively shorter and are equalled by the secondaries which are fairly long.

The tail is long and little rounded, the shafts of the feathers normal, not stiffened and pointed as in the normal Treecreepers.

The legs are short with the tarsus booted in front and behind, the tarsal covering consisting of two plates only; the feet are small, the anterior toes rather delicate, the third toe very large; the hind-toe and claw is longer than the middle toe and claw; the outer toe equal to the inner toe and claw and the outer toe and claw a little longer than the middle toe alone. The middle and inner toes are united at the base until almost the first joint, but although this has been in some cases emphasized as semisyndactylism it is almost the normal passerine state.

This peculiar form was first named from a painting by Latham as a *Certhia*, but was first described from specimens by Vieillot, who classed it in his genus *Petrodroma*, noting that the diagnosis of his genus must be amended, as in his new species *P. bailloni* the bill was shorter than the head. Almost simultaneously Temminck examined the two species named by Illiger in MS. some years previously and introduced the new genus *Climacteris*. He later figured these two, and Swainson considered they were male and female of the same species and proposed a new specific name for the combination. Selby indicated the Swainsonian complex as the type of the genus, and Gray, when he designated *C. picumnus* Temminck as type of the genus, probably inadvertently cited both figures. Later, Gray named *C. leucophæa* as the type, and I blundered badly in accepting this writing "by original designation" and thus when I separated the two species, hitherto confused, into two genera I named *C. picumnus* as the type of my new genus *Neoclima*.

F. E. Howe has recently reviewed this group and has concluded that one genus is sufficient for the three forms that differ, and noted that *C. rufa* could not be classed in *Whitlocka*, but might constitute a fourth. This indicates another mistake, which I had noted, but not yet rectified, as *C. rufa* is undoubtedly a "*Neoclima*" as some field workers had pointed out.

As there are three groups, whatever their ultimate value may prove to be, it was necessary to provide a new generic name for the species "*leucophæa* Latham=*bailloni* Vieillot=*scandens* Temminck" which I named *Cormobates*.

The geographical distribution of the three groups is interesting: *Climacteris* (i.e., *Neoclima olim*) ranging along Southern Australia from East to West; *Whitlocka*, Northern Australia from East to West, and *Cormobates* = *Climacteris* of my 1913 "List," Central Australia ranging to the coastal

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districts in the East, as in New South Wales and Victoria, and has been recorded from Tasmania. As indicating the peculiar nature of the group, the immature stages and the sexes differ, and extraordinary specific differentiation has taken place, probably at least nine distinct species being admissible.

The habits of the members of the three groups also show marked differences, as recorded by many workers.

Climacteris mystacalis Temminck, a Philippine Island form, is now separated by good workers under the genus name *Rhabdornis*, but examination of the tarsal envelope shows it to have the normal bilaminate hinder covering, and hence no close ally at all with the Australian *Climacteris* and not referable to my family Climacteridæ.

Key to the Species.

Under-surface reddish	..	..	..	..	..	<i>C. rufa.</i>
Under-surface greyish-brown	..	..	..	..	..	<i>C. picumnus.</i>
Upper-surface black, throat whitish	..	..	..	..	..	<i>C. melanotus.</i>



H. Grönvold. del

Witherby & Co.

CLIMACTERIS PICUMNUS.
(BROWN TREE CREEPER).

Order PASSERIFORMES.

Family CLIMACTERIDÆ.

No. 615.

CLIMACTERIS PICUMNUS.

BROWN TREECREEPER.

(PLATE 498.)

CLIMACTERIS PICUMNUS Temminck and Laugier, Planch. Color. d'Oiseaux, 47^e livr. (Vol. III., pl. 281, f.1), June 26th, 1824: "A la côte septentrionale de la Nouvelle Hollande" = Queensland.

Climacteris picumnus Temminck and Laugier, Planch. Color. d'Oiseaux, 47^e livr. (Vol. III., pl. 281, f.1), 1824; North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 42, 1906; Howe, Emu, Vol. IX., p. 233, 1910 (Vic.); Wilson, *ib.*, Vol. XII., p. 37, 1912 (Vic.); Howe, *ib.*, Vol. XXI., p. 37, 1921 (Review).

Climacteris scandens (error) Gould, Birds Austr., pt. iv. (Vol. IV., pl. 93), Sept. 1st, 1841; *id.*, Handb. Birds Austr., Vol. I., p. 598, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 191, 1878; *id.*, Tab. List Austr. Birds, p. 14, 1888; Hall, Key Birds Austr., p. 35, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 334, 1901; A. G. Campbell, Emu, Vol. II., p. 15, 1902 (Vic.); Hill, *ib.*, p. 165, 1903 (Vic.); Legge, *ib.*, Vol. III., p. 181, 1904 (Tas.); Littler, *ib.*, Vol. IV., p. 142, 1905 (Tas.); A. G. Campbell, Emu, Vol. VI., p. 181, 1907; Batey, *ib.*, Vol. VII., p. 8 (Vic.); G. Hill, *ib.*, p. 18 (Vic.); Austin, *ib.*, p. 30 (N.S.W.); Mathews, Handl. Birds Austral., p. 89, 1908; Gubanyi, Emu, Vol. X., p. 120, 1910 (N.S.W.); Stone, *ib.*, Vol. XII., p. 116, 1912 (Vic.); Chandler, *ib.*, Vol. XIII., p. 43, 1913 (Vic.); S. A. White, Emu, Vol. XIII., p. 128, 1914 (S.A.); Cleland, *ib.*, Vol. XVIII., p. 282, 1919 (N.S.W.); *id.*, *ib.*, Vol. XXI., pl. xxix., p. 143, 1921 (photos).

Climacteris leucophæa (error) Gadow, Cat. Birds Brit. Mus., Vol. VIII., p. 336, 1883.

Climacteris picumnus picumnus Mathews, Nov Zool., Vol. XVIII., p. 382, Jan. 31st, 1912.

Climacteris picumnus australis Mathews, *ib.*: Murray Flats, South Australia.

Climacteris picumnus victoriæ Mathews, *ib.*: Parwan, Victoria.

Neoclima picumna picumna Mathews, List Birds Austr., p. 251, 1913.

Neoclima picumna victoriæ Mathews, *ib.*; Belcher, Birds Geelong, p. 315, 1914.

Neoclima picumna australis Mathews, *ib.*

Climacteris waitei S. A. White, Emu, Vol. XVI., pt. 3, p. 168, Jan. 15th, 1917: Innamincka, (Central) South Australia; *id.*, *ib.*, Vol. XVII., pt. 1, pl. 1, 1917; *id.*, Trans. Roy.

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Soc. South Australia, Vol. XLI., p. 463, 1917; Howe, Emu, Vol. XXI., p. 40, 1921 (Review); Mathews, Austral Av. Rec., Vol. V., pts. 2-3, p. 36, 1923.

Neochmia (sic) *picumna australis* S. A. White, Emu, Vol. XVIII., p. 23, 1919.

Climacteris picumnus waitei Mathews, Austral Av. Rec., Vol. V., pts 2-3, p. 36, 1923.

DISTRIBUTION. South Queensland, New South Wales, Victoria and adjoining parts of South Australia, (?) Tasmania.

Adult male. Top of head, nape, and hind-neck dark lead-grey; back and wings sepia-brown; bastard-wing hair-brown with pale edging like the margin of the wing and first and second primary-quills; flight-quills also hair-brown, darker and inclining to black on the subterminal portion of the secondaries, some of which are drab-grey at the tips, a wide band of buff across the quills which becomes brighter on the secondaries; upper tail-coverts and tail similar to the back with a broad subterminal band of black on the latter; lores, supereiliary streak, sides of crown, sides of face, chin, and throat pale buff; fore-neck grey tinged with buff; breast, abdomen, and sides of body streaked with white and more narrowly with dark brown, the streaks fading away on the lower abdomen and vent; thighs dusky; under tail-coverts white, or buffy-white marked with black; axillaries and under wing-coverts buff; under-surface of flight-quills hair-brown with a patch of pale buff; lower aspect of tail blackish tipped with grey. Total length 170 mm.; culmen 15, wing 98, tail 69, tarsus 25. Figured. Collected at Parramatta, New South Wales, in July 1904. (Bottom figure.)

Adult female. General colour of the upper-surface including the mantle, back, rump, upper tail-coverts, scapulars and upper wing-coverts rust-brown; bastard-wing dark brown with pale outer margin; short outer primary similar but paler; primary-coverts and flight-quills blackish-brown with a wide band of buff across the latter, tips of secondaries drab-grey; base of tail, tips and middle feathers similar to the back with a broad black subterminal band; top of head and nape greyish-brown; base of fore-head, lores and supereiliary streak buff, becoming paler on the sides of the hinder-crown; sides of face, chin, and throat pale sandy-buff with pale shaft lines on the ear-coverts; the feathers on the middle of the lower throat fringed with chestnut; fore-neck and sides of neck drab-grey; breast also drab-grey tinged with fawn-colour and longitudinally streaked with blackish, the fawn-colour becoming much more pronounced on the abdomen, sides of body, and vent; thighs dusky-grey; under tail-coverts fawn-colour or whitish with dark brown bars or twin spots; axillaries and under wing-coverts buff; under-surface of flight-quills greyish at the base and hair-brown with a buffy-white patch for the remainder; lower aspect of tail similar to its upper-surface but paler. Total length 160 mm.; culmen 13, wing 97, tail 65, tarsus 23. Figured. Collected at Blacktown, New South Wales, on the 16th of July, 1905.

Adult male. Top of head, including fore-head and nape, dusky greyish-brown; mantle, back, scapulars, rump, upper tail-coverts, and upper wing-coverts coffee-brown; primary-coverts blackish like the basal portion of some of the outer flight-quills, which are paler at the tips and banded with orange-buff; secondaries similar but darker on the subterminal portion of the feathers; tail blackish, the middle feathers bronze-brown, as are also the tips of the lateral ones; a wide grey streak on the sides of the hinder-crown; sides of face dark brown with pale shaft-streaks; lores dusky tinged with buff; throat pale buff with hair-like tips to the feathers on the chin; upper breast, sides of neck, and sides of breast drab-grey, very slightly tinged with buff; lower breast, abdomen, and sides of body whitish, longitudinally

BROWN TREECREEPER.

streaked with black and washed with buff; under tail-coverts white, banded with black, and broadly margined with fulvous; edge of wing, under wing-coverts, and axillaries pale buff; under-surface of flight-quills hair-brown with a patch of pale buff; lower aspect of tail similar to its upper-surface but paler. Eyes brown, feet black, bill dark slate. Total length 160 mm.; culmen 15, wing 95, tail 70, tarsus 26. Collected at Parwan, Victoria, on the 19th of May, 1910, and is the type of *C. p. victoriae*.

Immature (?) male. Crown of head, fore-head, nape and hind-neck dark lead-grey; sides of face and sides of neck pale ash-grey; ear-coverts have dark integrated feathers with pale shaft-streaks; back, rump, upper tail-coverts, scapulars, and upper wing-coverts dark smoke-brown; greater-coverts and primary-coverts black; bastard-wing dark brown narrowly fringed with white; flight-quills blackish with a broad pale buff band across the feathers, the innermost secondaries and tips of the series greyish-brown; tail brown with a broad blackish subterminal and greyish-brown tips to the feathers; lores blackish; rectal-bristles black; chin white with black hair-like tips to the feathers; throat whitish; breast ash-grey; abdomen white narrowly lined with dark brown and tinged with pale smoke-brown; sides of body also pale smoke-brown more or less streaked with white; thighs dusky; under tail-coverts pale smoke-brown with white shaft-lines which are fringed with dark brown; axillaries and under wing-coverts pale buff; under-surface of flight-quills greyish-brown with a patch of pale buff; lower aspect of tail similar to its upper-surface. Eyes brown, feet slate, bill blackish, lower mandible dark brown. Total length 155 mm.; wing 87, tail 58, tarsus 21. Figured. Collected at Innamincka, Central Australia, on the 30th of September, 1916, and is *Climacteris waitei* S. A. White. (Top figure.)

Immature female. Top of head dusky-grey, becoming paler on the sides of the crown and sides of face; back, scapulars, rump, and upper tail-coverts dark rust-brown; upper wing-coverts similar to the back, but darker and inclining to blackish-brown on the greater series, bastard-wing, and primary-coverts; flight-quills dark brown, slightly paler on the outer edges and tips of the secondaries, and a pale cinnamon band across the inner webs extending to the outer webs of the outer secondaries; tail black, becoming pale brown on the middle feathers and still paler at the tips of the lateral feathers; lores and feathers in front of the eye black and bristly in texture; throat, fore-neck, and sides of neck dark ash-grey; breast and abdomen white with dark margins to the feathers which impart a streaked appearance; sides of body similar but somewhat strongly tinged with fulvous; under tail-coverts white with black twin markings and tinged with buff; axillaries and under wing-coverts cream-white; under-surface of flight-quills dark brown with a patch of whitish-buff; lower aspect of tail similar to its upper-surface but much paler. Eyes brown, feet slate, bill horn, under mandible white, gape white. Collected at Fern Tree Gully, Victoria, on the 7th of November, 1911.

Eggs. Two to three eggs form the clutch. A clutch of three taken at Belltrees, upper Hunter River, New South Wales, on the 19th of July, 1913, is of a pinkish-white ground-colour, covered nearly all over with small spots and specks of pinkish-red and purplish markings, and all closely set together. Very roundish in form; surface of shell fine and smooth, and slightly glossy. 22 mm. by 18-19.

Nest. Placed in the hollow limb or trunk of a tree, and composed of fur, hair, fine grasses, etc., and situated at heights varying from three to thirty feet or more up from the ground.

Breeding-months. July to October.

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ILLIGER is apparently responsible for the first distinction of this species, which was, however, first described by Temminck, who credited the species to Illiger, but proposed a new genus for the two birds associated by Illiger in the Berlin Museum with the names "*Certhia scandens* Ill." and "*Certhia picumnus* Ill."

Through a simple blunder Gould transposed these names and referred to the present species, the Brown Treecreeper, under the scientific name of *Climacteris scandens* Temminck, whereas the Brown Treecreeper had been named *C. picumnus*.

Gould wrote : "The Brown Treecreeper inhabits the whole of the south-eastern portion of the Australian continent, from South Australia to New South Wales. It gives a decided preference to the open thinly-timbered forests of *Eucalypti*, as well as the flats studded with the apple trees (*Angophoræ*), the bark of which, being rough and uneven, affords numerous retreats for various tribes of insects ; its food, however, is not only sought for upon the boles and branches of the trees, but is obtained by penetrating the decayed and hollow parts, and it even dives into the small hollow spouts of the branches in search of spiders, ants, and other insects ; although its form would lead to a contrary supposition, it spends much of its time on the ground, under the canopy and near the boles of the larger trees, in a similar pursuit, and also traverses the fallen trunks with a keen and scrutinizing eye. While on the ground it has a pert lively action, passing over the surface in a succession of quick shuffling hops, carrying its head erect with the feathers puffed out, almost in the form of a crest. Among the trees it assumes all the actions of the true Creeper, ascending the upright boles, and traversing with the greatest facility both the upper and under sides of the branches. It never descends with the head downwards, like the members of the genera *Sitta* and *Sittella* ; still I have seen it descend an upright bole for a short distance by hopping or shuffling backwards, as it were, generally making a spiral course. It flies with a skimming motion of the wings, during which the brown markings of the primaries are very conspicuous. Like many other insectivorous birds in Australia it seldom, if ever, resorts to the water for the purpose of drinking. It has a sharp piercing cry, which is frequently uttered, especially if the tree upon which it is climbing be approached."

Mr. Frank S. Smith has written me : "The Brown Treecreeper is one of the best known of the forest birds. Like the Grey Thrush and the Black and White Fantail it is extremely friendly, and a pair will soon make up with a bushman's camp. They are very local and I have seen a pair keep almost wholly to one large tree for many days. They forage round and under the tree, and every now and then climb it from the base, in curious jerky little

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runs. Unlike our Nuthatch they do not climb down the tree, at any rate I have never seen them do so. They are not at all shy, and soon frequent a bush hut for seraps. One afternoon as I was sitting in a hut, near a large tree, three Creepers, one a young bird not quite fully feathered, came round the door. They gathered up all the scraps, and as I stayed perfectly still, they finished by hopping in at the open door, within a yard of my feet. They are very busy birds, especially in the spring-time, when they are on the move all day. Only rarely do they make long flights and I have never seen them far up the trees. One big and very tall tree near my camp had a family of Honey-eaters in its topmost branches and one hundred feet below, at its base, a pair of Treecreepers; and I am certain that neither knew of the others' existence. The birds are very common. No one molests them and they may be found in any Victorian forest. They have no song, just a feeble twitter."

Mr. L. G. Chandler also writes: "In a certain clump of open timber at Bayswater a few of these birds are always to be found. At Melton and Parwan they are numerous. They differ from our other Treecreepers by spending a good deal of their time on the ground. I have repeatedly seen them hopping about on ants' nests. The birds seem to prefer low stunted timber, and are generally found in open forest."

Mr. Thos. P. Austin has sent me the following account: "The Brown Treecreeper is very numerous in the open forests and ring-barked country in the Cobbora district, New South Wales, but I have never met with it in the thick scrubs. Usually met with feeding upon the ground, or hopping up the trunks of trees or stumps; in the former case they often assemble in small flocks, but when disturbed they fly off in different directions to the nearest trees, generally settling near the base, slowly working their way higher and higher, round and round the trunk or in a zig-zag manner, searching in crevices for insects; when one tree has been partly searched it will fly off to another to repeat the operation. The flight is direct but undulating, just a few very rapid wing beats, then a float through the air with almost closed wings and so on. If they are being closely watched they keep on the opposite side of the trunk. For a nesting situation they prefer a perpendicular branch, about six inches in thickness, which has decayed away to a mere hollow shell, down which they firstly drop pieces of horse or cow dung, also small tufts of grass pulled up by the roots by stock; this forms a thick foundation about six inches in depth, on top of which the nest proper is built, cup-shaped, composed of dry grass, hair, fur and wool, all matted together in such a manner as to form a very cosy nest, and I have known them to build from five to sixty feet from the ground, hollow stock-yard posts often being a favoured nesting site, and often building a new nest on top of an old one. Three eggs usually

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form a clutch, and I have examined nests containing eggs from the second week in August till the first week in October."

Mr. F. E. Howe has written me: "In the open and hilly country a few pairs have been noted. It is very local and stays here the whole year. One call uttered three or five times and fairly high pitched is often heard, and another that sounds like 'gurr-r,' is uttered as the bird flies from tree to tree. This call is not like that of the northern typical bird and the bird seems lighter in colour."

Captain S. A. White has written me: "The Brown Treecreeper is invariably found in the heavily timbered country. I have found it in open timbered country. It is found all along the Mount Lofty Ranges and where its sharp call is a very familiar one, as it circles the tree trunks in search of insect life. This Treecreeper is a very local bird and I have known a pair to keep to the one locality of not half a mile square for many years. The bird was very plentiful here at the Reedbeds in years gone by, but now there is but one or, perhaps, two pairs left. This is due mostly to the domestic cat gone wild and to the imported English House Sparrow, which drives the Treecreeper out of the nesting hollows."

Later, reporting the Lower Murray Excursion, he recorded: "These birds were numerous amongst the big timber; they were also seen in the mallee. There were very large broods of fully-fledged young moving about with parent birds."

Chandler wrote from the Kow Plains, Victoria: "Abundant. The Treecreepers spend much time hopping on the ground." Howe also noted: "Very numerous in the tall mallee; eggs and young noticed in the tree hollows," while Wilson, writing about the Mallee, commented: "This Treecreeper, which is slightly larger in the bill than the southern birds, was frequently met with in the open country, and their nests were occasionally found. The eggs (two) of one clutch secured are remarkable on account of their size, being half as large again as those usually met with."

In his "Census of the Birds of the Pilliga Scrub, New South Wales," Cleland wrote: "Fourteen birds counted, uniformly distributed through the scrub. Minimal (*sic*) population, 924. Iris dark brown; bill and legs black; throat blackish. No entozoa."

Eliminating the confusion of the two specific names there is little to record concerning the technical history of the species. Until I prepared my "Reference List" no subspecies had been distinguished, probably on account of the dull coloration of the species as a whole. I, however, named:—

Climacteris picumnus picumnus Temminck and Laugier.

Queensland, New South Wales.

Climacteris picumnus australis Mathews.

BROWN TREECREEPER.

"Differs from *C. p. picumnus* in being much darker above. Murray Flats, South Australia."

South Australia.

Climacteris picumnus waitei S. A. White.

Central South Australia.

Climacteris picumnus victorice Mathews.

"Differs from *C. p. picumnus* in lacking the reddish-brown tinge of the back. (Parwan) Victoria."

Victoria.

In my 1913 "List" I referred these to the genus *Neoclima*, erroneously as I have shown above, and allowed the same three forms.

Recently F. E. Howe, reviewing the group, has concluded: "In a series of skins from Queensland to South Australia, the only difference detected is that the dark lines bordering the chest and abdomen feathers are narrower on inland birds. The birds inhabiting coastal regions are perhaps a little more robust in form."

Broadbent recorded it from Cardwell, but probably in error, as Campbell and Barnard state they found *C. melanota* there. As Broadbent's collection was stated to be placed in the Queensland Museum for reference, this point should be investigated, especially as Ramsay had also recorded the present species from the same district.

When Captain S. A. White recently described *Climacteris waitei* he wrote: "As far as yet known, the bird is confined to Cooper's Creek district, from above Innamincka in the east to Cuttapirie Corner in the west. The markings on the lower side of *Climacteris waitei* partake somewhat of those of *C. scandens* (i.e., *picumnus*), while the coloration of the back approaches that of *C. superciliosa*, but differs noticeably from both. Although of about the same size as *C. superciliosa*, this new bird has a shorter and stouter bill, its feet and legs much more powerful, and the claws longer and stronger. Habits much like those of other members of the genus. The call resembles that of *C. scandens* (i.e., *picumnus*) but is not so loud. I secured the first specimen in the vicinity of 'Burke's Tree,' a few miles above Innamincka, on the south side of Cooper's Creek. Fully fledged young ones were accompanying the parent birds as they flew from tree to tree, their advanced plumage suggesting that these birds had nested in June or July."

A further note was given in connection with a coloured plate: "A small family party was observed flying from one tree trunk to another, which they circled in true *Climacteris* fashion—in short hops, and tail pressed firmly against the bark when ascending the perpendicular tree trunk . . . showed a great preference for the box timber, for it was not once seen amongst the

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large red gum trees on the bank of the creek. These birds were observed once or twice hopping over the ground in close proximity to tree trunks, and seemed to be in search of insects, most likely ants, for the last-named form the chief food of *C. superciliosa* in some parts of the interior."

Howe has written recently: "I was able to examine the skin. . . A subsequent examination . . . leads me to believe that it is an immature male of *C. picumna*. I hope to deal more fully with this later on."

The skin sent me by Capt. S. A. White is figured, and it is an immature bird, as it agrees with other immature birds in my collection. The name will, however, stand for the subspecies from that locality, as pointed out by me in the Austral Av. Rec., Vol. V., p. 36, in February 1923.

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H. Grönvold del

Witherby & Co

CLIMACTERIS MELANOTA
(BLACK-BACKED TREECREEPER.)

CLIMACTERIS RUFA
(RUFous TREECREEPER.)

CLIMACTERIS RUFA.

RUFOUS TREECREEPER.

(PLATES 499 AND 504.)

CLIMACTERIS RUFA Gould, Proc. Zool. Soc. (Lond.), 1840, p. 149, July 1841 : West Australia.

Climacteris rufa Gould, Proc. Zool. Soc. (Lond.), 1840, p. 149, 1841; *id.*, Birds Austr., pt. iv. (Vol. IV., pl. 94), Sept. 1st, 1841; *id.*, Handb. Birds Austr., Vol. I., p. 600, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 191, 1878; Gadow, Cat. Birds Brit. Mus., Vol. VIII., p. 335, 1883; Ramsay, Tab. List Austr. Birds, p. 14, 1888; Hall, Key Birds Austr., p. 35, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 331, 1901; Milligan, Emu, Vol. II., p. 73, 1902 (W.A.); *id.*, *ib.*, Vol. III., p. 18, 1903 (W.A.); H. E. Hill, *ib.*, p. 106, 1903 (W.A.); *id.*, *ib.*, p. 227, 1904 (W.A.); Milligan, *ib.*, Vol. IV., pp. 6-10, 1904 (W.A.); Lawson, *ib.*, p. 135, 1905 (W.A.); North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 48, 1906; A. G. Campbell, Emu, Vol. VI., p. 181, 1907; Mathews, Handl. Birds Austral., p. 88, 1908; Gibson, Emu, Vol. IX., p. 74, 1909 (W.A.); Crossman, *ib.*, p. 89 (W.A.); Whitlock, *ib.*, Vol. X., p. 310, 1911 (W.A.); S. A. White, *ib.*, Vol. XIII., p. 30, 1913 (S.A.); Orton and Sandland, *ib.*, p. 79 (W.A.); Le Souëf, *ib.*, Vol. XX., p. 144, 1921 (W.A.); Alexander, *ib.*, p. 167 (W.A.); Howe, *ib.*, Vol. XXI., p. 40, 1921 (Review); Whitlock, *ib.*, p. 181, 1922.

Climacteris rufa obscura Carter, Bull. Brit. Orn. Club, Vol. XXVII., p. 16, Nov. 4th, 1910 : Warren River, South-west Australia; Mathews, Nov. Zool., Vol. XVIII., p. 382, Jan. 31st, 1912.

Climacteris rufa rufa Mathews, *ib.*

Climacteris rufa orientalis Mathews, *ib.* : Gawler Ranges, South Australia; *id.*, Austr. Av. Rec., Vol. I., p. 196, 1913.

Whitlocka rufa rufa Mathews, List Birds Austr., p. 252, 1913.

Whitlocka rufa obscura Mathews, *ib.*

Whitlocka rufa orientalis Mathews, *ib.*

DISTRIBUTION. South-west Australia and western parts of South Australia.

Adult male. General colour of the upper-surface dark chocolate-brown including the fore-head, crown, nape, hind-neck, sides of neck, back, rump, upper tail-coverts, scapulars, lesser, median and upper wing-coverts; bastard-wing, outer greater coverts and primary-coverts blackish with pale fringes to the feathers along the outer edge of the wing; flight-quills blackish-brown, inclining to bronze-brown on the apical portion, with a band of rufous-buff across the feathers, chiefly on

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the inner-webs ; middle tail-feathers bronze-brown, the lateral ones broadly banded with black ; lores and a line over the eye chestnut ; sides of face similar but rather paler, becoming still paler on the chin and throat ; a black spot in front of the eye the feathers of which are bristly in texture ; middle of fore-neck white streaked with black, and fringed with rufous-brown ; breast, abdomen, and sides of body rich chestnut with dark bases to the feathers ; under tail-coverts cinnamon-rufous with blackish twin spots ; axillaries and under wing-coverts cinnamon-rufous ; under-surface of flight-quills hair-brown with a patch of pale buff ; lower aspect of tail similar to its upper-surface. Bill black, eyes reddish-hazel, feet and legs brown-purple. Total length 155 mm. ; culmen 16, wing 86, tail 61, tarsus 26. Figured. Collected on the Warren River, South-west Australia, on the 18th of February, 1910, and is the type of *C. r. obscura* Carter.

Adult male. Entire crown of head including the fore-head, nape, and hind-neck lead-grey, becoming paler and inclining to ash-grey on the mantle ; back, scapulars, rump, and upper tail-coverts rust-brown ; upper wing-coverts hair-brown with slightly paler margins ; outer edge of wing cinnamon-buff ; primary-coverts dark brown ; flight-quills blackish-brown becoming somewhat paler on the apical portion with a broad band of bright buff, chiefly on the inner webs ; long upper tail-coverts and middle tail-feathers drab-brown, remainder of tail cinnamon-buff with a broad subterminal band of black ; lores and superciliary-streak pale chestnut ; sides of face, sides of neck, chin, and throat cinnamon-buff with dark hair-like tips to the feathers on the chin ; fore-neck white, lined with black, and tinged with cinnamon-buff, which is more pronounced on the upper breast ; lower breast, abdomen, vent, and thighs cinnamon-buff ; sides of body and flanks bright chestnut ; under tail-coverts white tinged with buff and marked with blackish on the shafts ; axillaries and under wing-coverts cinnamon-buff ; under-surface of flight-quills hair-brown with a patch of buff ; lower aspect of tail blackish with pale cinnamon-buff tips to the feathers. Total length 170 mm. ; culmen 13, wing 92, tail 66, tarsus 24. Figured. Collected at Beaufort, Williams District, South-west Australia, on the 1st of August, 1900.

Adult female. General colour of the upper-surface fulvous-brown including the back, wings, and tail ; entire top of head from the fore-head to the hind-neck and sides of crown dusky-grey ; rump more or less tinged with rufous-chestnut ; upper tail-coverts similar to the back but somewhat paler ; upper wing-coverts slightly greyer than the back ; flight-quills dark brown with a rufous band across the feathers, which becomes deeper in colour on the secondaries ; tail bronze-brown on the central feathers, the lateral ones rufous-buff with a dark subterminal band ; lores, superciliary streak, chin, and throat cinnamon-buff with hair-like tips to the feathers on the chin ; breast, abdomen, and sides of body rufous with whitish shaft-lines to some of the feathers ; under tail-coverts cinnamon-rufous with white tips and twin black dots on the shafts of the feathers ; axillaries and under wing-coverts cinnamon-rufous ; under-surface of flight-quills greyish-brown with a patch of cinnamon-buff ; lower aspect of tail greyish-brown. Total length 165 mm. ; culmen 14, wing 90, tail 64, tarsus 25. Figured. Collected at Beaufort, South-west Australia, on the 30th of July, 1900. (Plate 504.)

Immature male. General colour of the upper-surface dark smoke-brown including the top of the head, back, and wings, with a slight tinge of grey on the top of the head and hind-neck ; middle portion of the greater upper wing-coverts, bastard-wing, primary-coverts, and flight-quills, edge of wing and a band across the primary and secondary quills cinnamon-rufous ; rump and upper tail-coverts paler than the back and inclining to rufous-brown ; tail pale smoke-brown with a broad black subterminal band ; throat and sides of face cinnamon-rufous, becoming darker on the ear-coverts ; fore-neck buffy-white with dark spots or dark streaks

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to the feathers; breast, sides of breast, flanks, and abdomen chestnut-rufous, somewhat paler on the middle of the abdomen; under tail-coverts paler than the abdomen with twin black spots on the white shafts; axillaries, under wing-coverts, and base of flight-quills cinnamon-rufous, remainder of quill-lining dark hair-brown; lower aspect of tail similar to its upper-surface but paler. Eyes hazel, feet and legs greyish-flesh, bill purple-flesh, gape orange. Collected at Broome Hill, South-west Australia, on the 4th of November, 1910.

Eggs. Two to three for a sitting, and vary in shape from rather round to rounded ovals. A clutch of three eggs taken at Wilson's Inlet, Western Australia, on the 22nd of December, 1909, is of a pinkish-buff ground-colour, well spotted, blotched, and speckled all over with markings of reddish-brown and dull purple. Very rounded in form; surface of shell smooth and slightly glossy. 22 mm. by 18.

Nest. Placed in hollow spout or trunk of a tree, and consists of fur, soft and broken up bark, and fine grasses.

Breeding-months. September to December.

APPARENTLY this species was discovered by Gilbert, as Gould's notes read: "It is a common bird at Swan River, where Gilbert states it is most abundant in the gum forests abounding with the white ant; it ascends the smooth bark of the *Eucalypti*, and traverses round the larger branches with the greatest facility, feeding, like the other members of the genus, upon insects of various kinds; but it is frequently to be seen on the ground, searching for ants and their larvæ, and in this situation presents a most grotesque appearance, from its waddling gait. Its note is a single piercing cry, uttered more rapidly and loudly when the bird is disturbed, and having a very singular and striking effect amidst the silence and solitude of the forest."

Mr. Tom Carter has written me: "In your 'Reference List,' 1912, the Rufous Treecreeper is given as ranging through West Australia (*inland*). Mr. Shortridge found this species at Laverton, six hundred miles inland from Geraldston, where he says it was rare, and that *Cl. superciliosa* also occurred there. Mr. Milligan found this species common about the Wongan Hills, but does not note it as having been seen about Yandanooka, so perhaps its northern range may be put down as a little north of the Moore River, or about Lat. 30° S. These birds are very common in the Broome Hill district, and have been seen at Kellerberin. They are rather late breeders, the nesting season being September and October about Broome Hill. Sometimes the nests are difficult to reach from being far down a hollow spout, but are often within five or eight feet of the ground. On the edge of a frequented track between my house and the sheep drafting yards, there was a hollow spout only *four feet* from the ground, in a small York gum tree, in which I saw eggs in three different years. The eggs in the nest were only one foot from the entrance to hole. The nesting material is almost entirely of dry grass, sometimes leaves off jam or gum trees are used as a foundation. Clutch of eggs

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usually two. There is sometimes a lining to the nest of sheep's wool and a few feathers, and I have noticed that this bird as well as other species often use brilliantly coloured feathers from Parrots in the lining. In the nest previously mentioned, one egg was found in the nest Oct. 8th, 1908, and there were some red feathers of *Platy. icterotis* and green ones of *P. semitorquatus* in the lining. On Oct. 7th, 1906, two eggs were seen in the same nest, and on Oct. 10th, 1912, there were also two eggs, so these dates are very regular. Other nests were found 15 and 20 ft. from the ground, and sites of others seen at much higher elevations and difficult to reach. Fledged young appear mostly in October, but have been obtained as early as Sept. 25th. The birds are tame in their habits, and odd ones used to come on the house verandah and eat bread crumbs. They start at the foot of a tree and search the trunk upwards for insects, proceeding by short quick hops, usually accompanied by a slight opening of the wings. They are also often seen feeding on the ground, turning over the debris of pieces of dark bark, dry leaves and twigs beneath the trees in search of insects and grubs. Their only song (!) appears to be a rather shrill squeaking note. If one of these birds discovers it is being watched it will cleverly ascend the tree, keeping the trunk, or a limb, between it and you, even if you keep moving round too. This species was not observed east of the Pallinup River, S.E. of Broome Hill.

"The Allied Rufous Treeeereeper (*C. r. obscura*) appears to be confined in its distribution to the Jarrah forests that occupy such a large area of the south-western coastal districts. This Jarrah country extends, roughly, for a distance of 350 miles; from a little east of Albany on the south coast to the Moore River about sixty miles north of Perth (Swan River), Lat. 31° S. Jarrah is the prevailing timber for about fifty miles inland from the coast. West of Koyonup, Jarrah grows at a distance of fully seventy miles from the coast. Whether the subspecies under consideration is found throughout the Jarrah country has yet to be proved, but it probably does so. I obtained the type specimens on the Warren River in 1910, as it seemed to me that the Treeeereepers there were much darker in colour than those about Broome Hill. This dark shade, especially on the mantle, is distinctly protective to the birds, as they feed mostly on insects contained under and on the bark of the Jarrah and Red Gum tree trunks, and the colour of the bird assimilates very closely the dark reddish colour of the bark. It will be interesting to find if this subspecies also feeds much in the Karri forests, as Karri bark is pale yellow, but being very smooth in texture, probably does not contain nearly so much insect life as the very rough bark of the Jarrah and Red Gums. About Broome Hill the prevailing large timber is White Gum, with yellowish white bark, and *C. r. obscura* would be distinctly conspicuous upon it, much

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more so than *C. r. rufa* which is the subspecies occurring about there. Specimens of *C. r. obscura* have been obtained by me on the Blackwood River, the Hay River, Lake Muir, and around Albany, all in Jarrah and Red Gum timber. Karri timber occurs largely on parts of the Warren River, but the birds obtained by me in that district were on Jarrah trees. The habits of this subspecies resemble those of *C. rufa*, and doubtless the nesting and eggs will also be similar, but the breeding season is probably considerably later. On January 10th, 1912, I came upon a family of quite recently fledged young birds near Albany. They were attended by the parent birds and were in a patch of Blue Gums at the time, plenty of Jarrah growing with it."

Still more recently Carter has added: "Rufous Treecreepers were common about Broome Hill, and also seen at Woolundra," while "Allied Rufous Treecreepers (*C. r. obscura*) were observed and specimens obtained at Lake Muir, the Warren, Blackwood, Margaret and Collie Rivers. They were all of this darker subspecies and confirm its validity. The darkest coloured birds were obtained on Big Brook, a tributary of the Warren River from the east."

Captain S. A. White, in the recent West Australian visit of the R.A.O.U., writes: "Only seen once in the timber country (Margaret River)," while Ashby noted from Geraldton, "Not seen," and Mellor does not include it.

A. S. Le Souëf wrote: "The Rufous Treecreeper was numerous on the Porongorup Mountains (near Albany), where their habits were somewhat different from those of the eastern birds in that they fed high up on the trunks of the large trees. I did not see one fly to the base of a tree and run up, as the Brown Tree-creeper does. One specimen alighted on a large dead eucalypt about 100 feet up, and started his upward run from there."

Alexander, for the Perth district, recorded: "Resident. Uncommon in the district, though frequent in the Darling Ranges to the eastward."

Whitlock has very recently given some notes in connection with the birds of the Nullarbor Plain: "Two species of Treecreepers (*Climacteris*) were noticed, but had I not read Mr. Gibson's list I should not have been prepared to find the Rufous Treecreeper (*C. rufa*) so far east as Zanthus (130 miles east of Kalgoorlie). In the Murchison goldfield, in the neighbourhood of Lake Austin, I obtained specimens of *C. superciliosa*. My next experience was to find the latter species with *C. rufa* in a tract of York gums, 100 miles east of Geraldton. Some time afterwards I met with *C. superciliosa* about 30 miles to the south of Mulliwa. In the Wongan Hills, much further south, but in the same line of country, I obtained *C. rufa*, but at Southern Cross, further to the east, I met with *C. superciliosa* again. On travelling down to Norseman (Lake Dundas), the same species occurred north of Lake

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Lefroy. At Norseman, *C. rufa* alone was breeding near my camp. It was, therefore, puzzling to find *C. rufa* without *C. superciliosa* at Zanthus. At Naretha (205 miles east of Kalgoorlie), however, the gums having cut out, some forty miles to the west, *C. rufa* had disappeared, and its place was taken by *C. superciliosa*. The latter species was breeding in the hollow stems of dead trees. The first broods were on the wing early in September."

Milligan, from the Margaret River district, stated: "The colour of the plumage harmonizes not only with the rufous coloured bark of the jarrah trees, but also with the ironstone gravel country upon which the same trees grow. These birds are only found in the jarrah forests."

From the Stirling Ranges he noted: "This was the only species of Tree-creeper we saw. It was numerous on the good lands. I was much interested in watching them secure their food in the soil on the edge of the swamp by digging or probing with their bills."

H. E. Hill wrote from Brookton, West Australia, 100 miles south-east of Perth: "Very common in the granite. Very often to be seen hunting among the dead logs with which the ground is everywhere covered, as well as in the trees. When disturbed from the ground it almost invariably flew to a *dead* tree. Has a peculiar cry, which reminded me of that of the Rufous Bristle Bird (*Sphenura broadbenti*), and, in fact, the boys promptly christened it the wheelbarrow."

Gibson noted it between Kalgoorlie and Eucla, writing: "A few noted in the salmon barked gum country," and Crossman stated it was "Common" at Cumminin Station, about two hundred miles due east from Perth.

Captain S. A. White wrote: "We had not penetrated that interesting belt of mallee (which extends from the West Australian border and ends abruptly at the western end of the Gawler Ranges) twenty yards before this lovely bird was seen creeping up the bole of a grand mallee, and the next few days proved that they were very numerous. We felt sure that they must be nesting but could not flush a bird from a hollow, so sat down in the scrub and took a bird each under observation; in half an hour one went to the nest (after trying every ruse to decoy us, flying away in a most unconcerned manner, but having to return, hopping about on the ground as if nothing troubled them, and at first passing in and out of all the hollows around but the one where their nest was located); the female went into a hole and did not come out, and on investigating we found the nest, and after this we must have discovered quite twenty nests, but all contained either very young birds or heavily incubated eggs. This was the first week in September, and they must have all started to nest very much at the same time; there were not very many days between any of them. The big, old Mallee trees at Donald's

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Plain are ideal trees for this species to nest in, affording so many hollows. Their favourite nesting place is in a leaning tree (which of course bends away from the prevailing winds which are south-west), so that little or no rain can enter the hole, which is generally about 8 or 9 inches at the opening and its height about 7 feet from the ground (although I have seen it 15 feet), and the nest is most often 4 or 5 feet down and consisted of soft bark placed on the decayed wood with a few feathers as a lining, sometimes a little opossum or rabbit fur. The clutch varies from one to three, but most clutches were two. The call of these birds, although distinctly a *Climacteris* call, is much more feeble than that of other members of the genus. They spend more time on the ground hunting for food than I have ever seen with other species of this family. The examination of stomach contents reveals a variety of ants, many species which keep solely on the ground."

The technical history of this species is comparatively brief.

Gould described the species from Gilbert's collecting, so that the type locality would be inland from Perth. A few years ago Carter described

Climacteris rufa obscura.

"Differs from typical examples of *C. rufa* Gould in being very much darker in colour both above and below. The bill is longer and more curved, and the measurement of the wing is less, being 86 mm. In an example of *C. rufa* from Broome Hill, the wing measures 93 mm.

"*Hab.*: Warren River, South-west Australia."

In my "Reference List" I added a third form, including

Climacteris rufa rufa Gould.

West Australia (Inland).

Climacteris rufa obscura Carter.

West Australia (Coastal).

Climacteris rufa orientalis Mathews.

"Differs from *C. r. rufa* in being paler both above and below. (Gawler Ranges) South Australia."

South Australia.

In my 1913 "List" I still admitted the above, but referred the species to the genus *Whitlockia*, which was quite wrong.

F. E. Howe, in his recent review of the group, has concluded: "In this eastern race the markings on the fore-neck and chest are much darker and of greater extent than in the western forms, but I cannot find any variation in *W. r. obscura* from the dominant species." All the specimens available from the dark south-western forests show Carter's race to be very well marked, so that apparently Howe's series was poor. Shortridge collected specimens at Albany and Kalgoorlie, etc., and the former stands out as regards coloration.

Order PASSERIFORMES.

No. 617.

Family CLIMACTERIDÆ.

CLIMACTERIS MELANOTA.

BLACK-BACKED TREECREEPER.

(PLATE 499.)

CLIMACTERIS MELANOTUS Gould, Proc. Zool. Soc. (Lond.), 1846, p. 106, January 26th, 1847 :
Lynd River=River Nassau,* Queensland.

Climacteris melanotus Gould,† Proc. Zool. Soc. (Lond.), 1846, p. 106, 1847; *id.*, Birds Austr., pt. xxvii. (Vol. IV., pl. 96), June 1st, 1847; *id.*, Handb. Birds Austr., Vol. I., p. 603, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 191, 1878; Gadow, Cat. Birds Brit. Mus., Vol. VIII., p. 334, 1883; Ramsay, Tab. List Austr. Birds, p. 15, 1888; Hall, Key Birds Austr., p. 35, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 330, 1901; Bernoy, Emu, Vol. V., p. 75, 1905; A. G. Campbell, *ib.*, Vol. VI., p. 181, 1907; Mathews, Handl. Birds Austral., p. 88, 1908; *id.*, Nov. Zool., Vol. XVIII., p. 382, 1912; Campbell and Barnard, Emu, Vol. XVII., p. 29, 1917; Macgillivray, *ib.*, p. 203, 1918; F. E. Howe, *ib.*, Vol. XXI., p. 39, 1921 (Review); H. L. White, *ib.*, p. 166, 1922 (Eggs); *id.*, *ib.*, Vol. XXII., p. 112, 1922.

Whitlocka melanota Mathews, List Birds Austr., p. 252, 1913.

Whitlocka melanota barroni Mathews, Austral Av. Rec., Vol. II., pt. 7, p. 131, Jan. 28th, 1915: Cairns, Queensland.

Whitlocka melanota melanota Mathews, *ib.*

DISTRIBUTION. North Queensland.

Adult male. General colour of the upper-surface dull black, including the entire top of the head, nape, hind-neck, back, scapulars, rump, upper tail-coverts, tail, and upper wing-coverts; outer edge of wing and bastard-wing cream-white; flight-quills blackish-brown crossed by a broad band of pale buff, chiefly on the inner-webs; lores and a line above the eye, which widens out on the sides of the crown, white; sides of face, chin, and throat pale cinnamon-buff with whitish shaft-lines to the ear-coverts; a small patch of white feathers with black subterminal bands; fore-neck and upper breast drab-grey, becoming darker on the sides of the neck; lower breast, abdomen, and sides of body pale umber-brown with white elongated centres and black lines to the feathers; thighs also pale umber-brown; under tail-coverts white tinged with buff and barred and marked with black; axillaries and under wing-coverts pale buff marked with dark brown on the latter towards the margin of the wing; under-surface of flight-quills hair-brown with a large patch of pinkish-

* The River Nassau is about 25 miles inland from the Gulf of Carpentaria.

† Also spelt *melanota*, *melanonotus* and *melanonota*.

BLACK-BACKED TREECREEPER.

buff; lower aspect of tail blackish, somewhat paler at the tips of the feathers. Eyes dark chocolate-brown, bill and feet black. Total length 164 mm.; culmen 13, wing 91, tail 66, tarsus 21. Figured. Collected on the Walsh River, Eastern North Queensland, on the 27th of April, 1913, and is *barroni*.

Adult female. General colour of the upper-surface dull black, including the entire top of the head, nape, back, rump, upper tail-coverts, tail, scapulars, and the greater part of the wings; outer edge of wing and bastard-wing buffy-white; flight-quills (which are in moult) dark brown with a broad band of buff, chiefly on the inner-webs; lores, superciliary-streak, and sides of face buffy-white with more or less black on the ear-coverts; a black spot in front of the eye, the feathers of which are bristly in texture; a small patch of chestnut on the fore-neck with white centres to the feathers; breast and sides of neck drab-grey; abdomen and sides of body sepia-brown streaked with white and more narrowly with black; flanks and thighs umber-brown; under tail-coverts marked with black and white; axillaries and under wing-coverts whitish-buff more or less dotted with pale brown on the latter; under-surface of flight-quills hair-brown with a patch of pale buff; lower aspect of tail blackish, slightly paler at the tips. Eyes dark brown, bill and feet black. Total length 166 mm.; culmen 13, wing 91, tail 65, tarsus 21. Figured. Collected on the Walsh River, Eastern North Queensland, on the 29th of May, 1913.

Nest. Placed 24 feet from the ground in a hollow limb of iron-bark tree. Entrance 3 inches in diameter, depth 12 inches, bottom 4 inches diameter.

Eggs. Clutch two. Swollen ovals in shape; ground-colour pinkish-white, well marked all over, and particularly at the larger end, with specks and blotches of pale to rich reddish-brown and purplish markings, the latter being chiefly confined to the larger end. Surface of shell very fine and slightly glossy. 22 mm. by 17.

Breeding-season. October, November (to January?).

At the present time I have commonly associated with new forms of bird life the names of people interested in the study of ornithology, and some of my critics have complained, stating that place names were preferable, as the old custom of descriptive names is now much more difficult of application than in the past.

Yet how pleasing would it have been had this species borne the name of the ill-fated and gallant Gilbert, as indicated in the note given by Gould: "For this additional species of the limited genus *Climacteris*, a form confined to Australia, we are indebted to Dr. Leichardt's Expedition from Moreton Bay to Port Essington. It was killed in latitude 15° 57' south, on the eastern side of the Gulf of Carpentaria, and is rendered particularly interesting to me as being one of the birds procured by poor Gilbert on the day of his lamented death, the 28th of June, 1845, which untoward event prevented him from recording any particulars respecting it; all, therefore, that I can do, is to point out the differences by which it may be distinguished from the other members of the genus, and recommend to future observers the investigation of its habits. In the dark colouring and thick velvety plumage of the upper-surface it is most nearly allied to the *Climacteris melanura*, but differs from

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that species in being destitute of the lanceolate marks on the throat, and from all others in the dark colouring of the back."

Berney has written from the Richmond District, North Queensland: "The loud 'Spink, spink' of this *Climacteris* is to be heard fairly frequently among the river timber. To make sure of the species I shot a specimen for identification. Later in the same day (13th January, 1904) I watched a pair feeding a nestful of young in a hollow spout, five and thirty feet from the ground in a river gum. This species has a most peculiar cheesy or mouse-trap smell; it is most curious, and strikes one as soon as the bird is handled."

When Campbell and Barnard recorded this species from the Cardwell district, they wrote: "Broadbent states that a few specimens of the Brown Treecreeper (*C. scandens*) were seen by him between Gowrie Creek and Coldwater Station, on the Herbert River, in the open forest. This would be on the tableland. The species we obtained on the Kirrama tableland was *C. melanota*, which has similar cries and habits to those of *C. scandens*. Ramsay also refers to the bird as *C. scandens*."

As the Broadbent collection reported upon as above quoted was stated to be in the Queensland Museum, for purposes of reference it is advisable to examine the birds and record the facts.

Macgillivray has written: "Were in scattered pairs in the forest on the Archer River."

No subspecies were known until I named

Whitlocki melanota barroni.

"Differs from *W. m. melanota* in its larger size, wing 96 mm.; birds from Normanton have a wing measurement of 85·90 mm. The female differs from females from Normanton in being greyer on the under-surface. The type of *Climacteris melanota* Gould, 1846, was collected on the Nassau River about 25 miles from its mouth in the Gulf of Carpentaria, in open forest country. This new subspecies is from the thick jungle near Cairns, Queensland."

Very recently H. L. White has described the eggs collected by W. McLennan at Coen, Cape York Peninsula, about 200 miles N.W. of Cooktown.

GENUS—CORMOBATES.

CORMOBATES Mathews, Austral Av. Rec., Vol. V., pt. I.,
p. 6, July 17th, 1922. Type (by original designa-
tion) *C. leucophæa* Latham.

WHEN I separated *Neoclima* from *Climacteris* I wrote: "Differs from *Climacteris* in its shorter, more slender, less curved bill and stronger feet, the longer wing with comparatively longer first primary." The bill was *less* slender, not more slender, but the above shows the differences in the superficialities of these groups, so that of *Cormobates* I could write: "Differs from *Climacteris* (the type being *C. picumnus*, the Brown Treecreeper) in having a longer, more slender, and more curved bill, weaker feet and shorter wing." However, this would not indicate the differences in the two forms, as these birds are of more delicate build, and live among the trees, the true *Climacteris* living more on the ground and being of much stouter build.

Campbell wrote: "The richly coloured, reddish, and round eggs of the Treecreepers (*Climacteris*) make a handsome show, except those of *C. leucophæa* (White-throated Treecreeper), which are almost white. According to the science of oology, this species should be in a new genus. It certainly is not a true *Climacteris*."

Another item of unknown phylogenetic import in connection with the White-throated Creeper is the red spot just below the ear-coverts seen in the female alone, and the red rump of the juvenile plumage. This peculiar red colour shows again in the eyebrow of the Red-browed Creeper.

Key to the Species.

Upper-surface light brown:

Middle of chest not striated, no distinct eyebrow,	
larger	<i>C. leucophæa.</i>
Middle of chest striated, eyebrow distinct, smaller	<i>C. minor.</i>
Eyebrow white	<i>C. affinis.</i>
Eyebrow red	<i>C. erythrope.</i>

Order PASSERIFORMES.

No. 618.

Family CLIMACTERIDÆ.

CORMOBATES LEUCOPHÆA.

WHITE-THROATED TREECREEPER.

(PLATE 500.)

CERTHIA LEUCOPHÆA Latham, Index Ornith. Suppl., p. xxxvi., after May 30th, 1801; based on Lambert drawing, not on Watling drawing No. 139: New South Wales.

Certhia leucophæa Latham, Index Ornith. Suppl., p. xxxvi., 1801.

Dirigang Creeper Latham, Gen. Synops. Birds Suppl., II., p. 166, 1801.

Petrodroma bailloni Vieillot, Nouv. Dict. d'Hist. Nat., nouv. ed., Vol. XXVI., p. 107, Dec. 26th, 1818: New South Wales; *id.*, Galerie des Oiseaux, pl. 172, 1824.

Certhia leucoptera Latham, Gen. Hist. Birds, Vol. IV., p. 182, 1822: error for *leucophæa* only.

Climacteris scandens Temminck and Laugier, Planch. Color. d'Ois., 47^e livr. (Vol. III., pl. 281, f. 2), June 26th, 1824: New South Wales; Gadow, Cat. Birds Brit. Mus., Vol. VIII., p. 337, 1883; North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 44, 1906.

Climacteris auricomis Swainson, Classif. Birds, Vol. II., p. 319, July 1st, 1837: new name for *C. scandens* and *C. picumnus* Temminck.

Climacteris picumnus (error) Gould, Birds Austr., pt. iv. (Vol. IV., pl. 98), Sept. 1st, 1841; Mathews, Handl. Birds Austral., p. 88, 1908; Cleland, Emu, Vol. XI., p. 88, 1911 (Food.); *id.*, *ib.*, Vol. XII., p. 14, 1912 (Food).

Climacteris leucophæa Strickland, Ann. Mag. Nat. Hist., Ser. I., Vol. XI., p. 336, 1843; Gould, Handb. Birds Austr., Vol. I., p. 605, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 191, 1878; *id.*, Tab. List Austr. Birds, p. 15, 1888; Hall, Key Birds Austr., p. 35, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 332, 1901; A. G. Campbell, Emu, Vol. II., p. 15, 1902 (Vic.); Hill, *ib.*, p. 165, 1903 (Vic.); Littler, *ib.*, Vol. IV., p. 142, 1905 (Tas.); A. G. Campbell, *ib.*, Vol. VI., p. 181, 1907; Batey, *ib.*, Vol. VII., p. 8, 1907 (Vic.); G. F. Hill, *ib.*, p. 18 (Vic.); Fletcher, *ib.*, Vol. VIII., p. 33, 1908 (Tas.); Littler, Handb. Birds Tas., p. 51, 1910; Campbell, Emu, Vol. XIII., p. 67, 1913; S. A. White, *ib.*, Vol. XIV., p. 142, 1915: Mallacoota; Mellor, *ib.*, p. 158; Howe, *ib.*, Vol. XXI., p. 32, 1921 (Review).

Climacteris pyrrhonota Gould, Proc. Zool. Soc. (Lond.), 1867, p. 976, April 1st, 1868: Springfield, New South Wales; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 191, 1878; *id.*, Tab. List Austr. Birds, p. 15, note, 1888; Hall, Key Birds Austr., p. 35, 1899; Legge, Emu, Vol. III., p. 181, 1904 (Tas.); A. G. Campbell, *ib.*, Vol. VI., p. 181, 1907.



H. Grönvold, del

Witherby & Co

CORMOBATES LEUCOPHAEA.
(WHITE-THROATED TREE CREEPER).

WHITE-THROATED TREECREEPER.

Climacteris leucophæa leucophæa Mathews, Nov. Zool., Vol. XVIII., p. 383, 1912; *id.*, List Birds Austr., p. 250, 1913; Belcher, Birds Geelong, p. 313, 1914.

Climacteris leucophæa grisescens Mathews, Nov. Zool., Vol. XVIII., p. 383, Jan. 31st, 1912; (Mount Lofty) South Australia; *id.*, List Birds Austr., p. 250, 1913.

DISTRIBUTION. Southern Queensland, New South Wales, Victoria, Tasmania, South Australia.

Adult male. Top of head including the fore-head and nape blackish with pale margins to the feathers which impart a scalloped appearance; hind-neck, sides of neck, mantle, back, scapulars, lesser and inner upper wing-coverts sepia-brown; bastard-wing dark brown becoming black on the outer greater coverts and primary-coverts; flight-quills dark brown becoming black on the outer webs at the base of the primaries and on the subapical portion of the secondaries, which have the tips grey; a portion of the outer webs of the flight-quills are dark bronze-yellow and the inner webs buff or buffy-white, the innermost secondaries lead-grey; rump, upper tail-coverts, and middle tail-feathers slate-grey, the subterminal portion of the lateral ones blackish-brown; lores, feathers below the eye and ear-coverts whitish intermixed with black; chin, throat, and fore-neck white; hinder-cheeks, breast, and middle of abdomen ochreous-yellow with dark brown spots on the last; sides of body ochreous-brown broadly streaked with white and more narrowly with dark brown; thighs dusky; under tail-coverts white marked with twin black spots; axillaries and under wing-coverts buffy-white; under-surface of flight-quills greyish-brown with a patch of buffy-white; lower aspect of tail blackish-brown tipped with white, or grey. Total length 170 mm.; culmen 15, wing 91, tail 65, tarsus 22. Figured. Collected at Black Spur, Victoria, on the 8th of May, 1901.

Adult female. (Type.) Top of head, nape, hind-neck, sides of neck, back, scapulars and upper wing-coverts dark olive-brown, the feathers of the crown have pale tips; bastard-wing and primary-coverts blackish-brown; outer edge of wing white; flight-quills hair-brown crossed by a band of pale buff, tips of secondaries dull grey; rump similar to the back but slightly darker and more or less tinged with grey; upper tail-coverts and tail lead-grey with a broad black subterminal band to the lateral feathers which are more or less white at the tips; lores and eye-ring whitish; sides of face blackish with whitish shaft-lines to the feathers; chin, cheeks and throat white with a spot of orange-chestnut on the hinder-cheeks; breast and abdomen white tinged with pale yellow; sides of breast and sides of body drab-brown with white centres to the feathers which are margined with black; thighs dusky-brown; under tail-coverts whitish with dark twin spots, or bars to the feathers; axillaries white with dark tips; under wing-coverts white with a patch of brown near the margin; under-surface of flight-quills greyish-brown with a patch of buffy-white; lower aspect of the tail similar to its upper-surface. Eyes dark brown, bill blackish, lower base pallid, legs brownish, soles yellowish. Total length 160 mm.; culmen 17, wing 92, tail 62, tarsus 22. Figured. Collected on Mt. Lofty, Adelaide, South Australia, on the 17th of May, 1910, and is the type of *C. l. grisescens*.

Immature female. Top of head ochreous-brown with pale tips to the feathers; hind-neck, sides of neck, back, scapulars, and upper wing-coverts also ochreous-brown with white shaft-lines to the feathers; bastard-wing, outer greater coverts, and primary-coverts uniform blackish; flight-quills hair-brown becoming darker on the subterminal portion of the secondaries which are drab-grey at the tips; a bronze-yellow band across the quills chiefly on the inner webs; rump and upper tail-coverts bright rufous-chestnut; tail lead-grey with a wide black subterminal band; lores whitish, ear-coverts dusky-brown with pale shaft-lines; a patch of

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orange-chestnut on the hinder-face ; chin and throat white ; breast and abdomen white tinged with yellow ; sides of body drab-brown broadly streaked with white ; under tail-coverts buffy-white with twin spots of dark brown ; axillaries and under wing-coverts whitish ; under-surface of flight-quills hair-brown with a whitish patch ; lower aspect of tail dark brown tipped with grey. Figured. Collected in South Australia.

Eggs. Two to three eggs form the clutch, but three usually. A clutch of three eggs taken at Middle Harbour, Sydney, New South Wales, on the 9th of November, 1903, is white ground-colour, sparingly marked with rounded spots of reddish-brown and purplish-brown, which become more numerous about the larger end of each egg. Swollen ovals in shape ; surface of shell smooth and slightly glossy. 23-27 mm. by 16-17. Another clutch of three eggs, taken at Cobbora, New South Wales, on the 5th of October, 1916, are very rounded specimens, and measure 20-21 mm. by 16-17.

Nest. Is placed within a hollow limb or trunk of a tree, the hollow being lined with bark, grass, fur, etc., and placed at heights varying from 5 to 40 feet up from the ground.

Breeding-months. August to December (January).

THE early history of this species is somewhat complicated by the fact that two very distinct species were confused ; at one time the names being even transposed, at others the two species being regarded as sexes of one species only. Otherwise, as with the Treerunners, Gould named nearly all the species we have. Thus, admitted that the species was first named by Latham, as detailed later in the technical portion of this essay, Temminck named two species and Swainson proposed a new name on the grounds that these were sexes only of one species. Gould transposed the scientific names and these have been continually confused ever since.

Gould wrote : "The range of this species is as widely extended as that of the (Brown Treecreeper), being a common bird in New South Wales and the intervening country, as far as South Australia ; the precise limits of its habitat northward have not been ascertained, but it does not form part of the Fauna of Western Australia. The whole structure of this species is much more slender and Creeper-like than any other member of its genus, and I have observed that this difference of form has a corresponding influence over its habits, for they are more strictly arboreal than those of its congeners ; indeed so much so, that it is questionable whether the bird ever descends to the ground. It also differs from the (Brown Treecreeper) in the character of country and kind of trees it inhabits, being rarely seen on the large *Eucalypti* of the open forest lands, but resorting to trees bordering creeks as well as those on the mountains and the brushes. I have frequently seen it in the brushes of Illawarra and Maitland, in which localities the (Brown Treecreeper) is seldom if ever found. While traversing the trunks of trees in search of insects, which it does with great facility, it utters a shrill piping cry ; in this cry, and indeed in the whole of its actions, it strikingly reminded me of the Common

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Creeper of Europe (*Certhia familiaris*), particularly in its manner of ascending the upright trunks of the trees, commencing at the bottom and gradually creeping up the bole to the top, generally in a spiral direction. It is so partial to the *Casuarinae*, that I have seldom seen a group of those trees without at the same time observing the White-throated Treecreeper, their rough bark affording numerous receptacles for various kinds of insects which constitute its sole diet. I have never observed this species near the water-holes, and I feel assured it has the power of subsisting without drinking."

Mr. F. E. Howe wrote me: "This white-throated bird is fairly well distributed through the district and is to be found in the thick dense forests of Ferntree Gully and also along the wooded creeks of Ringwood. During the season of 1907 I noticed a pair carrying the bark to a hollow about twelve feet high, and on Sept. 28th it contained two eggs and incubation had just commenced. On Oct. 13th the same year we found another nest containing three young and another with three eggs slightly incubated; another with two eggs was found on the 26th October. Both birds were feeding the young, and about sunset they made visits on an average of a minute each or one bird in two minutes and this was noticed for about twenty minutes. Sometimes after feeding the young, one would emerge from the nest holding in its bill the excrement of the young, and drop it over the edge. The call note is high pitched and is quickly uttered six or seven times. They appear to be very local and a pair may always be seen working in a certain bit of country having a radius of perhaps three or four hundred yards."

Mr. L. G. Chandler has sent me an extract from his note book: "Oct. 10, 1908. Watched this bird building nest. The nest is situated in a hollow spout, running at an angle of 90° off the tree, which is a slightly leaning one. Height from ground about eighteen feet. One bird only seen during the work and the material is being stripped from neighbouring saplings. The bird visited the same sapling (stringy-bark gum) several times in succession. All heavy and burnt pieces of bark are being brought to top of spout and ejected. The bird seems a little uneasy at my presence and eyes me suspiciously. Time 2.15 p.m."

Mr. Thos. P. Austin has written me from Cobbora, New South Wales: "The White-throated Treecreeper is fairly numerous in the thick scrubs and ironbark tree ranges, but seldom met with in the open forests. It appears to prefer the very class of country which the Brown Treecreeper avoids. Its loud calls are to be heard the whole day long, and they penetrate through the forests for some considerable distance. Excepting when gathering nesting material I have never seen this species upon the ground. Their manner of searching trees for food is very similar to that of the Brown, but they are not quite so constantly on the move. I have watched them hanging on to

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the trunk of a tree, remaining perfectly still for some minutes. When they are climbing the dark ironbark trees they are very difficult to see, their brown backs harmonise well with the bark, and they usually try and keep on the opposite side of a trunk or branch to an intruder. Their nests are most difficult to find; if they know they are being watched they will not go near them. While sitting down in a thick forest one day I saw a bird flying towards me; it alighted on top of a dead ironbark tree, uttering a few low notes, then immediately flew to where a rather small branch had been broken off the very top of the tree; out of a hollow in this another bird popped its head, and the other bird fed it. The nest contained two fresh eggs. All the other nests I have examined containing eggs, with one exception, were found by seeing the birds carrying nesting material. The nests are not nearly so substantial as those of the Brown, being composed almost entirely of fur, with the addition of a little dry grass. I have examined nests containing fresh eggs from the last week in August till the middle of October. The clutch is usually two, sometimes three."

Mr. E. J. Christian also wrote: "Most of the time it keeps up a shrill chattering, especially if disturbed. If one approaches the nest the birds will swiftly fly past uttering a peculiar p-i-n-g such as a rifle bullet makes. It seems to prefer dead trees as I very seldom see it on a green one, but can see it almost any day on any dead tree here."

Captain S. A. White has written me: "The White-throated Tree-creeper has a very wide range and I have found it in nearly every well-timbered locality on the coastal belt, its unmistakeable cry is part of the forest calls. The fact that the young have the upper tail-coverts ruddy-brown for the first year has led many field workers to imagine that they had met with a new bird. The variety inhabiting South Australia is found all along the Mount Lofty Ranges, being much more plentiful towards the western end, this being no doubt due to the presence of the big stringy-bark forests there. I have found them nesting in October and November, and at times they will lay their eggs upon the decayed wood a long way down a hollow trunk or limb. They are almost entirely insectivorous."

Concerning the Birds of Mallacoota, Victoria, Captain White wrote: "Very plentiful, especially amongst the *Angophora* trees near the coast. They were nesting at the time of our visit, and nests containing young were observed. Many of the immature birds, in their first year's plumage, accompanied the mature birds. The females of the former were adorned with deep rufous upper tail-coverts, which coloration appears on the young in the nest, and which they retain for the first year. Strange to say, two singular features are connected with the females of this species. One is having a small orange-coloured spot just below the ear-coverts—this distinguishes the female at

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once from the male; the other is that it seems almost certain that the immature of this sex alone develop the bright rufous coloration on the rump and upper tail-coverts. John Gould, like others, described the immature female of this species as a distinct species (*C. pyrrhonota*), but afterwards found his mistake. On comparing adult specimens with those from South Australia, it is found that the latter birds are larger and lighter on the back, while those from Queensland are much darker above and below. The nest is in a hollow branch, deep down, neatly constructed of grass, it usually contained three eggs. One nest observed contained two young and an egg; both young birds showed the red coloration appearing with the first feathers on the rump."

Mellor added a note describing in detail the young and stated: "A notable feature, and one that strikes the observer instantly, is the large patch of bright rufous-brown which extends from a quarter way up the back right down the tail-coverts, and forms a conspicuous rufous rump; this is noticeable even in the nestlings, but, I believe, is only found in the young females, for such is my experience with a number of specimens handled. This rufous rump lessens in size and intensity as the bird matures, until it finally disappears, giving place to the slaty-grey colour of the old bird. From specimens now before me I find that the process of changing does not come about by moulting, but by a fading away of the rusty colour and a gradual predominance of the slaty-grey coloration."

In his recent "Review" F. E. Howe wrote: "Both parents feed the young. The visits to the nest are frequent, fifteen being noted in as many minutes. Often a bird returned before the other had left, and the bird inside would take the food from the waiting bird and return with it to the young. The birds brought out any excreta as did the Red-browed species. When building they approached the nest in the same manner—alighting a short distance below the hollow, remaining stationary a few seconds with the head back, and then creeping quickly up and disappearing rapidly within. The lowest nest found was fifteen inches from the ground, and the highest seventy feet up. From this nest a young bird, nearly fully fledged, flew. . . . On October 31st, 1920, a nest contained two young birds about ten days old. One had the orange cheek-patch and bright red rump. The other was minus the cheek-patch and the grey rump was slightly washed with rufous. Traces of the rufous rump and upper tail-coverts may be found more or less in birds otherwise in adult plumage. . . . Is a young male with the rump grey . . . probably two or three months old. . . . At Bayswater on December 11th, 1920, a nest contained four young birds about a fortnight old, and all had a bright rufous rump. . . . The breeding season in Victoria extends from August to January, and two broods are reared."

When there is confusion between experts on matters of determination of related but distinct species the field ornithologist has to suffer, and

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then comes the usage of vernacular names, but in this case there appears to be also confusion. Apparently each worker has confused the facts as well as the names, so that it is difficult to re-arrange matters and it may be well to work backwards.

Sharpe, in his exposition of the Watling drawings (*Hist. Coll. Nat. Hist. Brit. Mus.*, Vol. II., 1906), stated on p. 134:—

“139. Dirigang Creeper. Lath., *Gen. Syn. Suppl.* ii, p. 166.

Certhia leucophæa. Lath., *Ind. Orn. Suppl.*, p. xxxvi.

Climacteris scandens. (Temm.) Gadow, *Cat. B.*, VIII., p. 337.

This figure is the type of Latham's “Dirigang Creeper,” and Dr. Gadow has wrongly identified the species. The bird which he calls *Climacteris scandens* of Temminck is the true *C. leucophæa* (Latham), and *C. leucophæa* Gadow (*Cat.*, p. 336) *nec* Latham, should stand as *C. picumnus*, Temm. [Cf. Hellmayr, *Tierr.* 18 Lief. Paridæ, etc., p. 224 (1903)]. Mr. Hellmayr rightly points out that Strickland and others were wrong in assigning Latham's name of *leucophæa* to *C. picumnus*, but he did not succeed in identifying Latham's description, and places his *Certhia leucophæa* among the doubtful species of *Meliphaga*. Watling's note: “Half the natural size. Native name *Deri-gong*. A small Woodpecker of New South Wales.”

The statements made by Sharpe are not exactly accurate as re-examination of the Watling painting, No. 139, shows. This is signed “T.W.g.” and the native name is “Den-gong,” but on the painting is written in Latham's handwriting: “Ash-tailed Creeper, Latham MS. A variety of Dirigang, Supp. 2, p. 166.” This disposes of the statement that this painting 139 is the type of the Dirigang Creeper.

Latham's description of that must now be reproduced:

“*Certhia leucophæa*. *C. olivaceo-fusca* sub*tus* albida, vertice nigro transversim lineato, pone oculos macula flava.

Dirigang Creeper, *Gen. Syn. Supp.* II., p. 166, 23.

Habitat in Nova Hollandia; magnitudo *C. familiaris*; macula flava infra & pone oculum, altera aurantia.

Dirigang Cr(eeper). In size this species somewhat exceeds our *Common Creeper*: plumage above pale olive or greenish-brown; beneath white, inclining to dusky on the belly; on the fore-head and crown are a few short transverse black lines; under the eye a patch of yellow, and behind it another of a reddish colour; at the bend of the wing a few pale spots; bill and legs dusky.

Inhabits *New South Wales*, where it is called a *Woodpecker*, from hence we may suppose it to frequent and run up and down trees in the manner of that bird. The native name is *Dirigang*.”

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This description appears to be based on a Lambert drawing which differs very little from this Watling painting 139 perhaps in lacking the ashy tail coloration and in having the head more noticeably barred.

When Gray saw the Lambert painting he identified it as *Glyciphila subocularis* Gould and suggested that species should be called *Glyciphila* (?) *leucophæa*. Strickland and Gould, however, identified the drawing as that of the White-throated Treecreeper, although they used *picumnus* for that species, and the latter in his "Handbook" called that species *Climacteris leucophæa*. The noticeable feature of these identifications is the lack of remark regarding the under coloration, which does not indicate anything about the remarkable flank markings of the present species. Otherwise, the painting No. 139 is very good, showing the ashy tail and the reddish spot behind the eye of the female.

Temminck and Laugier named the two species, and Gould figured them under the reversed names, and Gadow catalogued them erroneously, so we have a confused chronology thus:—

	T. and L.	Gould figd.	Gould Hand.	Gadow Cat.
Brown Creeper	<i>Cl. picumnus</i>	<i>scandens</i>	<i>scandens</i>	<i>leucophæa</i>
White-throated Creeper	<i>scandens</i>	<i>picumnus</i>	<i>leucophæa</i>	<i>scandens</i>

and at present the correct usage is *picumnus* for the first and *leucophæa* for the second.

Prior to Temminck's description Vieillot had named the present species *Petrodroma bailloni* and given a figure of it in the *Nouv. Dict. d'Hist. Nat.* The description there is good, though not complete, but an easily recognisable figure was a little later published in the *Galerie des Oiseaux*. For some unknown reason Gould did not refer to this name, and Gray only included it as a synonym with a ? and Gadow did the same thing. The recognition of this name might have obviated some of the later confusion.

Then, some years later, Gould described as a new species *Climacteris pyrrhonota* on account of the red-brown rump.

Ramsay, twenty years afterward, wrote: "*C. pyrrhonota* I find to be only a stage of plumage of *C. leucophæa*; specimens from Cairns, Queensland, are much smaller, and in the immature birds show the same rufous upper tail-coverts." A year or two later Ramsey named this northern form *C. l. minor*, and then Reichenow named the same form *C. weiskei*. I am separating this specifically so that we have now only two subspecies:—

Cormobates leucophæa leucophæa (Latham).

South Queensland, New South Wales,
Victoria, Tasmania.

Cormobates leucophæa grisescens Mathews.

South Australia.

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The latter I separated with the diagnosis: "Differs from *C. l. leucophæa* in its larger size and greyer coloration on the upper-surface. Wing 91.92 mm.; typical 84 mm."

Howe in his "Review" has written: "After examining many skins I see no reason for retaining Mr. Mathew's South Australian form *C. l. grisescens*. It is identical with skins from the Dandenong Ranges, Victoria." The type locality of *C. leucophæa* is Sydney, New South Wales, and probably some Victorian birds are referable accurately to the South Australian form, which differs as above given.

The Treecreepers of Tasmania deserve a note to themselves. Colonel Legge reported seeing a "Creeper" which he surmised might be *C. scandens*, and adding: "Having occasion to refer to the genus with B.M. Catalogue, I find that specimens of *C. scandens* and *C. pyrrhonata* are both in the B.M. collection, collected by that indefatigable field naturalist, Ronald Gunn, Esq., and in all probability procured in the northern forests of an island." An editorial note explained: "*C. pyrrhonata* is now generally accepted to be the young of *C. leucophæa* (i.e., *scandens*), Gould having inadvertently transposed the names *leucophæa* under his figures. It is quite probable that the White-throated Treecreeper is found in Tasmania, seeing it is a common species near the coast line on the mainland immediately opposite."

Simultaneously Littler wrote: "In no list can I find mention of any member of the family *Certhiidae* being found in Tasmania. I have met with both the White-throated Treecreeper (*Climacteris leucophæa*) and the Brown Treecreeper (*C. scandens*) in some of the heavily timbered forests in the north-eastern portion of the island—forests consisting mainly of big timber." The editorial comment here reads: "Mr. Littler would promote the interests of the ornithology of his island were he to, say on his next holidays, procure these birds for complete identification. The pleasure of such a trip would be enhanced by the anticipation that the reputed Treecreepers may be new to science, if not sub-specific to the mainland forms quoted by him."

Miss Fletcher then added: "A matter of interest I was unable to settle was whether one of the Treecreepers (*Certhiidae*) was a resident of this district (Wilmot, North-west Tas.). I am almost certain that the *Climacteris leucophæa* (White-throated Treecreeper) was a frequenter of the great gums on the Government reserve, but was not able to get one shot for identification."

Littler in his *Handbook of the Birds of Tasmania*, published after the preceding, only included one species, the White-throated, so that the Brown species still needs confirmation as to its occurrence.



H. Grönvold. del

Witherby & Co

CORMOBATES MINOR.
(LITTLE TREE CREEPER.)

Order PASSERIFORMES.

No. 619.

Family CLIMACTERIDÆ.

CORMOBATES MINOR.

LITTLE WHITE-THROATED TREECREEPER.

(PLATE 501.)

CLIMACTERIS LEUCOPHÆA MINOR Ramsay, Tab. List Austr. Birds, 2nd ed., Add., p. 2, June 1st, 1891 : Bartle Frere, North Queensland.

Climacteris leucophæa minor Ramsay, Tab. List Austr. Birds, 2nd ed., Add., p. 2, 1891 ; Mathews, Nov. Zool., Vol. XVIII., p. 383, 1912 ; *id.*, List Birds Austr., p. 250, 1913 ; Howe, Emu, Vol. XXI., p. 41, 1921 ;

Climacteris leucophæa Ramsay, Proc. Zool. Soc. (Lond.), 1875, p. 599 ; *id.*, Tab. List Austr. Birds, p. 35, 1888 ; Selater, Bull. Brit. Orn. Club, Vol. XV., p. 9, 1904 ; Broadbent, Emu, Vol. X., p. 239, 1910.

Climacteris weiskei Reichenow, Ornith. Monatsb., Vol. VIII., p. 187, Dec. 1900 : North Queensland=Bartle Frere ; Hartert, Bull. Brit. Orn. Club, Vol. XV., p. 10, 1904.

Climacteris minor Mathews, Handl. Birds Austral., p. 89, 1908 ; H. L. White, Emu, Vol. XVI., p. 164, 1917 ; Campbell and Barnard, *ib.*, Vol. XVII., p. 29, 1917 ; Campbell, *ib.*, Vol. XXII., pl. LXXI., 1923.

Cormobates minor northi Mathews, Austral Av. Rec., Vol. V., pts 2-3, p. 36, Feb. 21st, 1923 : Barron River, North Queensland.

Cormobates minor minor Mathews, *ib.*

DISTRIBUTION. Queensland, Cairns district alone.

Adult male. Top of head, including the fore-head and nape, black with pale margins to the feathers which impart a scalloped appearance ; hind-neck, sides of neck, back, rump, scapulars, and lesser upper wing-coverts olive-green ; bastard-wing, outer greater coverts, primary-coverts, and outer webs of primaries black ; flight-quills dark brown becoming darker on the secondary-quills, with a bronze-yellow band across the quills chiefly on the inner-webs, tips of secondaries drab-grey ; lores blackish minutely speckled with white and black hair-like tips to the feathers ; ear-coverts blackish with pale shaft-streaks ; chin and throat white ; fore-neck, sides of neck, and upper breast pale grey ; lower breast, abdomen, sides of body, and under tail-coverts ochreous-yellow with black lines, spots, or bars to the feathers ; axillaries and under wing-coverts yellow ; under-surface of flight-quills hair-brown with a patch of yellow ; lower aspect of tail blackish-brown tipped with grey. Bill horn, lower mandible lighter, eyes brown, feet brownish-black. Total length 140 mm. ; culmen 13, wing 80, tail 57, tarsus 21. Figured. Collected on the Barron River, near Cairns, North Queensland, on the 4th of July, 1910.

Adult female. Crown of head, including fore-head and nape, black with pale margins to the feathers which impart a scalloped appearance ; hind-neck, back, rump, and scapulars olive-green ; upper wing-coverts blackish edged with olive-green including

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the primary-coverts; flight-quills hair-brown becoming blackish on the secondaries which are drab-grey at the tips, a band of bronze-yellow across the quills, chiefly on the inner webs; upper tail-coverts and tail grey with a wide band of black on the subterminal portion of the latter; lores whitish with black hair-like tips to the feathers; ear-coverts dusky-brown with pale shaft-lines; an orange-chestnut spot on the hinder-cheeks; chin and throat white fading into greyish-buff on the fore-neck, sides of neck, and upper breast; lower breast, abdomen, sides of body, and under tail-coverts ochreous-yellow with black fringes, spots, or bars to the feathers; axillaries and under wing-coverts similar but the dark pattern smaller; under-surface of flight-quills hair-brown with a patch of yellow; lower aspect of tail blackish tipped with grey. Total length 135 mm.; wing 81, tail 60, tarsus 21. Figured. Collected on the Barron River, near Cairns, North Queensland, on the 29th of June, 1910. (Top left-hand figure.)

Adult male. Top of head and nape blackish with pale margins to the feathers, which impart a scalloped appearance; back and wings bronze-brown; outer median and greater upper wing-coverts, bastard-wing, and primary-coverts blackish; flight-quills bronze-brown on the outer aspect, a band of buff across the quills being narrow and pale on the primaries and wider and brighter on the secondaries, which are inclining to black on the subapical portion; upper tail-coverts and middle tail-feathers dark slate-grey, the outer feathers blackish tipped with greyish-white; sides of face dusky with an indication of pale shaft-streaks; lores, chin, throat, and cheeks whitish; fore-neck, sides of neck, and breast smoke-brown; sides of body similar, with white or buffy-white streaks and spots to the feathers; abdomen fawn-colour spotted with dark brown; thighs dusky; under tail-coverts buffy-white with dark cross-bars; axillaries, under wing-coverts, and edge of wing buffy-white; under-surface of flight-quills dark brown with a patch of buff; lower aspect of the tail dark brown with pale tips to the feathers. Total length 140 mm.; culmen 14, wing 80, tail 58, tarsus 21. Collected on the Barron River, North Queensland, on the 9th of July, 1910.

Nearly adult female. Top of head blackish with pale margins to the feathers which gives a scalloped appearance; mantle, back, rump, scapulars, and upper wing-coverts olive-green; bastard-wing, outer greater coverts, primary-coverts, and outer webs of primary-quills near the base black; flight-quills hair-brown becoming darker and inclining to black on the subterminal portion of the secondary-quills, a band of buff or buffy-white across the quills, chiefly on the inner webs; tips of secondaries drab-grey; upper tail-coverts slate-grey with a few chestnut feathers intermixed; tail also grey with a wide subterminal band of black; lores and feathers in front of the eye minutely speckled with black and white and have hair-like tips; ear-coverts blackish with whitish shaft-lines; hinder part of cheeks orange-chestnut; chin and throat white; fore-neck ochreous-grey; breast, abdomen, and sides of body ochreous-yellow with black fringes to the feathers; thighs dusky; under tail-coverts ochreous-yellow with black bars or spots; axillaries and under wing-coverts pale buff; under-surface of flight-quills hair-brown with a buff patch; lower aspect of tail blackish-brown tipped with grey. Eyes dark brown, bill and feet black. This bird has a reddish feather or two on the rump. Total length 145 mm.; culmen 13, wing 78, tail 57, tarsus 20. Figured. Collected at Kuranda, near Cairns, North Queensland, on the 28th of March, 1913. (Bottom figure.)

Nearly adult female. Top of the head and nape blackish; back, scapulars, and upper wing-coverts bronzo-brown; inner primary-coverts black; flight-quills blackish-brown becoming paler at the tips and a band of buff across the feathers—paler and more narrowly on the primaries, brighter and more broadly on the secondaries; upper tail-coverts dark slate-grey; middle tail-feathers greyish-brown, the lateral ones black with greyish-brown tips; lores blackish; ear-coverts orange-chestnut; chin,

LITTLE WHITE-THROATED TREECREEPER.

cheeks, and throat whitish; fore-neck, sides of neck, and upper breast dusky-grey; sides of body dark grey with white elongated centres to the feathers, which are fringed with black; lower breast and abdomen buff with dark brown markings to the feathers; under tail-coverts buff or buffy-white with blackish cross-bars like the axillaries; under wing-coverts similar but more coarsely marked; under-surface of flight-quills dark brown, irregularly marked with pale buff; lower aspect of tail similar to its upper-surface but paler. Eyes dark brown, feet blackish-brown, upper mandible black, lower brownish-black. Total length 135 mm.; culmen 13, wing 76, tail 57, tarsus 23. Collected at Kuranda, North Queensland, on the 26th of November, 1912.

Immature female. Crown of head dark brown, including the fore-head and nape, with pale margins to the feathers; hind-neck, sides of neck, back, rump, scapulars, and upper wing-coverts olive-brown with obscure dark brown bars and mottlings to the feathers; bastard-wing, outer greater-coverts, and primary-coverts blackish like the base of the primaries and the subterminal portion of the secondaries, the tips of the last inclining to bronze-green, tips of primaries somewhat paler than at the base; a bronze-yellow band across the quills which becomes brighter on the inner-webs; upper tail-coverts rather paler than the back with two or three small chestnut feathers intermixed; tail dark grey with a wide subterminal band of black; lores dull whitish; sides of the face dusky-brown with pale streaks to the ear-coverts; a pale buff line below the ear-coverts; chin and throat greyish-buff becoming darker on the fore-neck; breast dark drab-grey with dark brown spots; abdomen similar but more coarsely marked and strongly tinged with ochreous-buff; sides of body dark brown streaked with buffy-white; under tail-coverts buff marked with twin spots of dark brown; axillaries and under wing-coverts buff intermixed with dark brown; under-surface of flight-quills dark brown with a patch of buff towards the base; lower aspect of tail blackish, becoming dark grey at the tip. Eyes dark brown, bill and feet brownish. Collected at Kuranda, near Cairns, North Queensland, on the 11th of December, 1912. (Lower left figure.)

Nest. Consisted of green moss and soft bark to a depth of six inches, placed in a hollow of a small tree in scrub; eggs in small depression on top of the moss.

Eggs. Clutch two, swollen oval in shape, surface of shell very fine and almost devoid of gloss. Ground-colour very pale creamy-white, sparingly marked all over with minute spots and specks of reddish-brown and pale lilac. 21 mm. by 16.

Breeding season. October.

GADOW separated some birds in the British Museum as a northern race, but did not name this as the birds were of doubtful locality, supposedly Queensland.

In his *Tabular List Austr. Birds*, Ramsay in 1888 made a note, p. 35: "*Climacteris leucophæa*. Specimens recently received from the Cairns District, Queensland, are of a smaller race than the southern forms," and in a second edition of that *List* issued in 1891 he named this form *Climacteris leucophæa minor*. Of course this naming was overlooked, and consequently Reichenow proposed a new species *Climacteris weiskei* from specimens collected by Weiske in North Queensland.

Later the species was differentiated by the late Mr. A. J. North who wrote me: "I had fully described this smaller form and sent the description together with the type to Dr. Sclater, the former to be published in the *Ibis*

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under a new name. I withdrew the description in time owing to the discovery of Dr. Ramsay's name of *C. minor*. Dr. Selater marked the label of my skin when he returned it, *C. weiskei*, but Dr. Sharpe, who also examined the specimen, marked on the back of the same label 'not *C. weiskei*.' He also stated that *C. minor* did not occur in his copy of Ramsay's *Tabular List*."

Campbell, in his *Nests and Eggs*, wrote: "Whether Mr. K. Broadbent refers to this bird or not, he says: 'There is a very distinct variety if not a new species of Treecreeper which frequents the scrubs, never or seldom appearing in the open and is characterised by a much darker plumage. This has till now shared in the specific name *leucophæa*,' " and added "Perhaps this is the slightly smaller and northern race—from Moreton Bay upwards—mentioned in the *Brit. Mus. Cat.*, having a well pronounced pale grey collar across the fore-neck, all the other parts being coloured as in *leucophæa*."

Years afterward, having collected specimens in the Cardwell district themselves, Campbell and Barnard wrote: "There is so much difference between the northern White-throated Treecreeper and its southern representative that the difference appears more specific than merely subspecific. *C. minor* differs from *C. leucophæa* not only in its smaller size and much darker coloration, but by having the throat grey instead of white, and by the light stripes on the under-surface being buffy instead of white. The light patch on the wing is also darker (yellowish-buff). Comparative dimensions in inches:—

<i>C. leucophæa</i>	♂	Length	6	wing	3½	tarsus	7⁄8	culmen	5⁄8
<i>minor</i>	♂		5		3		3⁄4		5⁄8
<i>minor</i>	♂		5		3½⁄8		3⁄4		5⁄8
<i>leucophæa</i>	♀		6		3½⁄8		7⁄8		5⁄8
<i>minor</i>	♀		5		27⁄8		3⁄4		1⁄2

Northern eggs average .83 × .62; southern average .85 × .64 inches."

Recently, reviewing the group, F. E. Howe has written: "One is struck by the smaller size and slender appearance, the greyish throat, and the beautiful freckled chest and abdomen of the northern form (*C. minor*). A skin in the collection of Mr. Edwin Ashby is undoubtedly referable to *C. minor*, but it was collected at Bulli, New South Wales. Unless the specimen was wrongly labelled, this is very far south for the bird, as its habitat is towards Cape York, North Queensland, the type being collected near Cardwell."

As already remarked, the most perplexing form is *Climacteris leucophæa minor*, a miniature of the southern White-throated Treecreeper (*C. leucophæa*). Mr. A. J. Campbell remarks: "that the difference appears more specific than subspecific," and states the differences and measurements of both. He does not then give it specific rank, but I agree with Campbell that the differences appear cumulative and therefore rank it here as a species.

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CORMOBATES AFFINIS.
(WHITE-BROWED TREECREEPER).

CORMOBATES ERYTHROPS.
(RED-BROWED TREECREEPER).

Order PASSERIFORMES.

No. 620.

Family CLIMACTERIDÆ.

CORMOBATES ERYTHROPS.

RED-BROWED TREECREEPER.

(PLATE 502.)

CLIMACTERIS ERYTHROPS Gould, Proc. Zool. Soc. (Lond.), 1840, p. 148, July 1841 : New South Wales (Liverpool Range).

Climacteris erythroops Gould, Proc. Zool. Soc. (Lond.), 1840, p. 148, 1841 ; *id.*, Birds Austr., pt. iv. (Vol. IV., pl. 95), Sept. 1st, 1841 ; *id.*, Handb. Birds Austr., Vol. I., p. 602, 1865 ; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 191, 1878 ; Gadow, Cat. Birds Brit. Mus., Vol. VIII., p. 338, 1883 ; Ramsay, Tab. List Austr. Birds, p. 15, 1888 ; Hall, Key Birds Austr., p. 35, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 335, 1901 ; North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 49, 1906 ; A. G. Campbell, Emu, Vol. VI., p. 181, 1907 ; Mathews, Handl. Birds Austral., p. 89, 1908 ; Chandler, Emu, Vol. IX., pp. 28-94, 1909 (Vic.) ; Howe, *ib.*, Vol. XXI., p. 34, 1921 (Review).

Climacteris erythroops erythroops Mathews, Nov. Zool., Vol. XVIII., p. 383, 1912 ; *id.*, List Birds Austr., p. 250, 1913.

Climacteris erythroops olinda Mathews, Bull. Brit. Orn. Club, Vol. XXXVI., p. 91, July 7th, 1916 : Olinda, Victoria.

DISTRIBUTION. New South Wales, Victoria.

Adult male. Crown of head blackish with grey fringes to the feathers on the fore-head and sides of the crown ; lores, fore part of cheeks, and eye-ring, a dark spot in front of the eye, which have hair-like tips to the feathers ; hinder face drab-grey ; mantle, back, and scapulars sepia-brown ; upper wing-coverts blackish fringed with dark olive ; bastard-wing and outermost primary dark brown edged with white ; outer greater coverts, primary-coverts, and outer webs of primary-quills at the base black ; flight-quills hair-brown becoming darker and inclining to black on the secondaries which have drab-grey tips, a broad band of buff, or buffy-white across the inner-webs of the quills ; rump, upper tail-coverts, and tail-slate-grey with a wide band of blackish-brown on the last ; chin, throat, and lower cheeks whiteish ; a band of drab-grey across the fore-neck ; breast, abdomen, and sides of body drab-grey streaked with black and white, becoming ochreous on the lower abdomen which is spotted with dark brown ; thighs lead-grey ; under tail-coverts buffy-white marked with black ; axillaries cream-white marked with pale brown or grey ; under wing-coverts white ; under-surface of flight-quills hair-brown with a patch of buffy-white towards the base ; lower aspect of tail blackish tipped with grey. Eyes hazel, feet dull black, bill black. Total length 145 mm. ; culmen 15, wing 87, tail 67, tarsus 22. Figured. Collected at Olinda, Victoria, on the 6th of June, 1909.

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Adult female. Crown of head and fore-head black with grey fringes to the feathers; nape and hind-neck black; lores, a broad line over the eye and eye-ring dark chestnut; sides of neck and sides of hinder face lead-grey; back, scapulars, and lesser upper wing-coverts dark smoke-brown like the inner median and inner major-coverts; bastard-wing and first primary-quill pale brown margined with white; outer median and outer greater coverts black; primary-coverts and base of primary-quills black becoming paler towards the tips of the latter; secondary-quills blackish tipped with dusky-grey, with a band of pale buff across both series of flight-quills; rump, upper tail-coverts, and middle tail-feathers slate-grey, the lateral feathers grey at the base, followed by a wide subterminal black band, and pale grey tips to the feathers; chin and throat whitish slightly tinged with chestnut; fore-neck and upper breast chestnut with broad white shaft-lines; lower breast, abdomen, and sides of body drab-brown broadly streaked with white and more narrowly with black becoming paler towards the vent; thighs dusky; under tail-coverts buffy-white barred with black; axillaries and under wing-coverts spotted with pale brown; under-surface of flight-quills pale brown with a patch of buffy-white; lower aspect of tail blackish, broadly tipped with lead-grey. Bill and feet black. Total length 143 mm.; culmen 14, wing 84, tail 64, tarsus 23. Figured. Collected at Olinda, Victoria, on the 7th of June, 1909.

Immature birds of both sexes "resemble the adults, but are destitute of the rusty-red lores, superciliary stripe and orbital region, these parts being dusky greyish-brown; the chin and centre of the upper-throat are dull buffy-white, remainder of the under-surface uniform light earth-brown, except the centre of the abdomen, which is buffy-white; under tail-coverts buff with imperfect V-shaped blackish-brown cross-bars." (North.)

Eggs. Two to three eggs form the clutch, and seldom four. A clutch of two eggs taken at Selby, Dandenong Ranges, Victoria, on the 13th of September, 1914, is of a pinkish-white ground-colour, well marked nearly all over with small spots and specks of reddish-brown, and dull purplish. Ovals in shape; surface of shell smooth and rather glossy. 24 mm. by 17.

Nest. A compact mass of bark, well lined with fur, and placed in a hollow limb or spout of a tree. Height of nest varies from 20 to 40 feet or more from the ground.

Breeding months are August to January.

GOULD named this distinct Treecreeper, and recently confusion has crept in through the bad policy of lumping, suggested in my early writings, as to species, though splitting as to subspecies. While such a procedure may be useful, though I now doubt it, with regard to Palæarctic forms, it is not so beneficial to the Austral student. The complex climatic conditions known throughout Australia are quite alien to the Palæarctic student of avian forms, and more or less incomprehensible.

Gould stated: "I obtained this interesting species while encamped on the low grassy hills under the Liverpool range; but whether it is generally distributed over the colony, or merely confined to districts of a similar character to those in which I found it, I had no opportunity of ascertaining. So far as I could observe, its habits and manners bore a striking resemblance to those of the *Climacteris leucophæa*. One singular feature connected with

RED-BROWED TREECREEPER.

this species is the circumstance of the female alone being adorned with the beautiful radiated rufous markings on the throat, the male having this part quite plain; a fact which I ascertained beyond a doubt by the dissection of numerous specimens of both sexes; it is true that a faint trace of this character is observable both in *Climacteris scandens* and *C. rufa*, but the present is the only species of the genus in which this reversion of a general law of nature is so strikingly apparent."

Very little is known about this species, as North found after he had described his *C. superciliosa* that all the interior records of *C. erythropus* referred to the white-browed form.

However, Mr. L. G. Chandler met with this species at Olinda, Victoria, and wrote me: "Like *C. leucophæa* it commences at the foot of a tree and works spirally upwards when in search of insects. This is probably the furthest south that it has been secured." The same year Chandler wrote: "Since the above it has been found by other workers, Messrs. T. H. Tregellas and F. E. Wilson, and from June 5th to 7th several birds were noticed by me in the same locality. Finding the birds still in the locality as late as June, I should think it will prove them residents and not casuals as I at first surmised. The country they were found in is a stretch of white gum, peppermint and stringy-bark timber, bordering a creek, and forms a valley or flat between two hills. The birds appeared to search the upper branches in order as they came to them and gave no preference to any one species of tree. The first specimen I secured resembled the White-throated Creeper in the habit of commencing at the foot of the tree and working spirally upwards, but the birds observed this trip were not noticed to leave the upper trunks and branches. One call resembles slightly a call of the White-throated Creeper, and is a silvery bell-like trill and exceedingly sweet. However, it can be distinguished from the note of that bird."

F. E. Howe in his recent "Review" has recorded: "I also met this agile and beautiful form in the Dandenongs, from Ferntree Gully towards Gembrook, and have little doubt that it extends through the eastern and north-eastern portion of Victoria. It is far from rare, and half a dozen birds may be seen together, generally in the non-breeding months. In Victoria, the habitat is the hilly country where messmate, blackwood, mountain ash and white gums abound. When half creeping and fluttering up the long hanging strips of bark of the two latter trees the bird is seen to advantage, while it examines a tree very thoroughly, often working each limb to the extremity. It rests in an upright position on the side of a tree, and I believe these Treecreepers roost in a like position in the burnt out hollows at the base of large trees. The call-notes are a harsh, high pitched medley, not unlike those of the Striated

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Grass Wren (*Diaphorillas striata*) when disturbed from a bunch of porcupine grass; other notes are silvery and tremulous, and it also utters the familiar high-pitched staccato notes of the White-throated Treecreeper, but sweeter and not so sustained. The bird is arboreal, and may feed on ants on fallen dead trees in company with its White-throated cousin. The flight, rapid and undulating, also resembles that of the White-throated bird. The birds are silent at times, and hours may be spent in their feeding grounds without catching a note. The first intimation that they are about is, perhaps, a few high-pitched, harsh notes, often difficult to locate, or else, after a lightning-like streak, a bird alights on a tree trunk, and, as its back is turned towards one, it has then to be ascertained whether it is *C. erythrops* or not. In this country of dense undergrowth, it is difficult to follow the birds. However, they are strictly local. Two pairs I know can always be located in about twenty acres of dense scrub and big timber. . . . The breeding season extends from August to January, and two broods are reared. The superciliary stripe is never white in either sex, as in the male of the White-browed Treecreeper (*C. superciliosa*). The Red-browed bird is also more robust in form."

In my writings I have previously considered the White-browed Treecreepers to differ subspecifically only from the Red-browed ones, but I now think it best to treat them as distinct species.

Consequently of the present species two forms only are admissible:

Cormobates erythrops erythrops (Gould).

New South Wales.

Cormobates erythrops olinda (Mathews).

"Differs from *C. e. erythrops* Gould in having a darker head and back. Olinda, Victoria."

Victoria.

Order PASSERIFORMES.

No. 621.

Family CLIMACTERIDÆ.

CORMOBATES AFFINIS.

WHITE-BROWED TREECREEPER.

(PLATE 502.)

CLIMACTERIS AFFINIS Blyth, Journ. Asiatic Soc. Bengal, Vol. XXXII., p. 453, 1863, 1864 :
ex Melbourne=Broken Hill, New South Wales.

Climacteris affinis Blyth, Journ. Asiatic Soc. Bengal, Vol. XXXII., p. 453, 1864.

Climacteris superciliosa North, Ibis, 1895, p. 341, July 1st : Illara Creek, Central Australia ;
id., Report Horn Sc. Exp., part II., Zool., p. 96, pl. 7, 1896 ; Hall, Key Birds Austr.,
p. 35, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 336, 1901 ; Milligan,
Emu, Vol. IV., p. 6, 1904 (W.A.) ; North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 51,
1906 : A. G. Campbell, Emu, Vol. VI., p. 181, 1907 ; Mathews, Handl. Birds Austral.,
p. 89, 1908 ; Grant, Ibis, 1909, p. 665 ; Howe, Emu, Vol. VIII., p. 134, 1909 (Vic.) ;
Whitlock, *ib.*, Vol. IX., p. 208, 1910 (W.A.) ; Macgillivray, *ib.*, Vol. X., pp. 90-2-5,
1910 (N.S.W.) ; Hill, *ib.*, Vol. XII., p. 241, 1913 (Central Australia) ; Campbell,
and Kershaw, *ib.*, p. 276 ; S. A. White, *ib.*, Vol. XIII., p. 31, 1913 (S.A.) ; Ashby,
ib., Vol. XVII., p. 219, 1918 (S.A.) ; Howe, *ib.*, Vol. XXI., p. 36, 1921 ; Whitlock,
ib., p. 182, 1922 ; Campbell, *ib.*, Vol. XXII., p. 257, 1923.

Climacteris erythrops superciliosa Mathews, Nov. Zool., Vol. XVIII., p. 383, 1912 ; *id.*,
List Birds Austr., p. 251, 1913 ; S. A. White, Emu, Vol. XIV., p. 190, 1915.

Climacteris erythrops neositta Mathews, Nov. Zool., Vol. XVIII., p. 383, Jan. 31st, 1912 :
Callion, West Australia ; *id.*, List Birds Austr., p. 250, 1913.

Climacteris erythrops parsonsi Mellor, South Austr. Ornith., Vol. IV., pt. 1., p. 5, Jan. 1st,
1919 : Pungonda, Mallee, South Australia.

DISTRIBUTION. Central Australia, limits of range unknown, as far south in east as
Pungonda, Northern New South Wales (interior) and Mid-west Australia.

Adult male. General colour of the upper-surface rust-brown, including the hind-neck, sides
of neck, back, rump, scapulars and upper wing-coverts ; bastard-wing and first
primary dark brown edged with white on the outer web ; primary-coverts blackish-
brown ; flight-quills blackish, somewhat paler towards the tips of the primaries
and drab-grey at the tips of the secondaries, with a band of buff, which commences
on the third or fourth primary ; upper tail-coverts and tail drab-grey with a wide
black subterminal band on the lateral feathers, which is only slightly indicated
on the middle ones ; top of head greyish-brown ; lores and superciliary streak
whitish ; feathers in front of the eye black and bristly in texture ; ear-coverts

THE BIRDS OF AUSTRALIA.

blackish with whitish shaft-streaks; chin whitish; throat, lower-cheeks, and fore-neck drab-grey; breast and upper abdomen white with black margins to the feathers; lower abdomen, sides of body and vent similar but strongly tinged with ochreous-brown; thighs dusky-brown; under tail-coverts buffy-white with twin spots of black; axillaries and under wing-coverts buffy-white with dark spots becoming buff on the greater series of the latter; under-surface of flight-quills hair-brown with a patch of buff; lower aspect of tail similar to its upper-surface but paler. Total length 152 mm.; culmen 13, wing 90, tail 59, tarsus 21. Figured. Collected at Callion, West Australia, and is the type of *C. e. neositta*.

Adult female. Top of head, nape and hind-neck dark ash-grey; lores and superciliary streak chestnut with whitish shaft streaks to the feathers, becoming white on the sides of the crown; feathers in front of the eye black and bristly in texture; ear-coverts blackish with white shaft-streaks; sides of neck, mantle, back, rump, scapulars and upper wing-coverts pale bronze-brown; bastard-wing and primary-coverts blackish; flight-quills also blackish, becoming paler on the apical portion of the primaries and drab-grey on the tips of the secondaries, with a band of buff which commences on the second primary; upper tail-coverts and tail drab-grey with a blackish subterminal band on the outer feathers of the latter, which is only slightly indicated on the middle feathers; chin, throat, lower cheeks, and throat buffy-white tinged with chestnut; fore-neck chestnut with white centres to the feathers; upper breast and sides of upper breast drab-grey with white centres to the feathers; lower breast and sides of lower breast white with black margins to the feathers; abdomen and flanks white streaked with black and broadly margined with ochreous-brown; thighs dusky; under tail-coverts buffy-white with twin spots of black; axillaries and lesser under wing-coverts spotted with dark brown, the larger series of the latter buff, like the inner webs of the flight-quills, remainder of quill-lining hair-brown; lower aspect of tail similar to its upper-surface but paler, and showing obsolete cross-bars. Bill black, eyes brown, feet and legs lead-grey. Total length 138 mm.; culmen 11, wing 86, tail 55, tarsus 19. Figured. Collected near Lake Way, East Murchison, West Australia, on the 25th of August, 1909.

Eggs. Two to three eggs form the clutch. A clutch of three taken at Borewell, East Murchison, Western Australia, on the 3rd of September, 1909, is of a pinkish-white ground-colour, spotted and speckled nearly all over with markings of pinkish-red and purplish-red. Swollen ovals in shape; surface of shell fine and slightly glossy. 21-22 mm. by 15-16.

Nest. Placed in hollow limb or trunk of a tree, and composed of fur, hair, and vegetable down, strips of soft bark, and dried grasses. The nest containing the clutch of eggs under notice was situated in the hollow trunk of a tree, and within three feet of the ground.

Breeding-months. September, October and November.

MANY years ago the Melbourne Institution presented a series of birds to the Asiatic Society through the intervention of Edward Blyth, the Curator of the Museum of that Society at Calcutta. Blyth was one of the great British ornithologists of his age and never missed an opportunity of describing new species from any material he received from different parts of the world. He had a keen appreciation for detail, a prodigious memory and a lot of experience; his main lack was specimens. He named a few Australian birds, but these

WHITE-BROWED TREECREEPER.

had generally been anticipated, but in the present case he appears to have selected a good example overlooked for nearly sixty years.

When this parcel was received he reported upon it and noted two species new to him and described them as new to science. The first was *Pomatorhinus pileatus*, which is the same bird as Hartlaub a few years previously had described as *P. ruficeps*; the second he called *Climacteris affinis*, describing it as: "Like *Cl. erythrope*, but with slight pale non-rufous *supercilia*, which are not conspicuously noticeable; throat dull whitish, passing to greyish on breast, and a small central ferruginous spot at base of throat; ear-coverts pale, streaked. Specimen doubtless of the female sex."

The type locality of these two new species is probably the same, that is, the north-west of Victoria or south-west of New South Wales. I have selected Broken Hill, New South Wales, as the type locality of *P. ruficeps* Hartlaub, and this seems to be a very likely place for these to have been collected. I therefore designate as type locality of *P. pileatus* Blyth, Broken Hill, New South Wales, and I also select Broken Hill, New South Wales, as the type locality of *Climacteris affinis* Blyth.

Thirty years after Blyth had distinguished this species, North named *Cl. superciliosa* from Hara Creek, Central Australia, and quite recently the form inhabiting the South Australian and Victorian Mallee (i.e., *C. affinis* Blyth) has been distinguished as a distinct subsp., *Cl. erythrope parsonsi*, by Mellor.

Captain S. A. White wrote: "We met with this bird for the first time on this trip and at first glance took it for *C. erythrope*. The only place we saw these birds was at the south end of Lake Gairdner amongst a dry, scattered, myall scrub, one of the driest and most miserable pieces of country we saw on our trip. We felt sure these birds were nesting, but although we searched thoroughly we found no nest. We only saw four birds in many miles of country round the shores of the Lake. Their call is much louder than that of *C. rufa*, and they do not take to the ground like that species. They were under observation for a long time while we tried to discover their nesting locality, and they showed no desire to take to the ground, but hopped along fallen trees in the *Climacteris* jerky fashion. Of course the country they inhabit would not produce much insect life on the bare ground, while in the Mallee country there is much débris."

Capt. White also wrote: "Seems to be spread all over the interior, and it is strange that it was not described before the Horn Expedition, for we found them numerous west of Port Augusta (as above). The bird seems to prefer Mulga (*Acacia anura*) to any other timber. Strange to say it was not met with in the north-east, where *C. waitei* took its place."

THE BIRDS OF AUSTRALIA.

Macgillivray has, however, written in his account of the Region of the Barrier Range, north of Broken Hill, about this species as follows: "On a ridge I paused to watch the movements of a White-browed Treecreeper (*Climacteris superciliosa*) as he flitted from tree to tree in search of food. . . . The nest of a Treecreeper (*C. superciliosa*) was found in a casuarina, five feet from the ground; it contained three young birds In one of the black oaks was another nest (two young) of *C. superciliosa* On a black oak ridge we rested awhile and watched the movements of a Treecreeper (*C. superciliosa*), then went on to another ridge, where we found a nest of this species in a dead sandal-wood, the hollow being about four feet from the ground. The base of this nest was composed of dry grasses, a layer of horse-dung, then the usual thick bed of rabbit fur, on which two eggs reposed. The eggs are a good deal smaller than those of the Brown Treecreeper, and more richly coloured. . . . While watching a Red-browed Pardalote feeding among the sandal-wood, we found a Treecreeper's (*C. superciliosa*) nest, with young birds, in a hollow tree, about four feet from the ground. . . . The calling of a White-browed Treecreeper led McLennan to find its nest in a sandal-wood, the pair of eggs resting on the usual bed of rabbit fur."

Howe recorded in the *Emu* for 1909: "I also found a nest of the White-browed Treecreeper (*Climacteris superciliosa*) (?) which contained three fresh eggs, and secured the female for identification (in North-west Victoria)." In his recent "Review" he, however, has written: "I shall not readily forget my first glimpse of this fine bird at Walpeup, in the Mallee of North-western Victoria, during September, 1910. The timber was mostly belar, sandal-wood, myall, needlewood, with here and there large mallee. Whilst watching a Red-capped Robin feeding his mate, a bird with a lightning-like flight alighted on the trunk of a fallen pine. It was a Treecreeper new to me. The conspicuously white eyebrow hinted its identity. We sought the nest after losing sight of the bird, but, being unfamiliar with the calls, we could not again find it. My next meeting with the bird was at Linga, 25 miles further west. During September, 1916, a male White-browed Treecreeper alighted on a Murray Pine. In September, 1917, the birds were located at Boinka, a few miles west of Linga. They were feeding with the Little Tit-Warbler (*Acanthiza nana*) and the Brown Treecreeper, the latter appearing to differ slightly from the form found near Melbourne. The White-browed Treecreeper reminded me of its Red-browed cousin, but was less rapid in its movements. The call notes resembled those of the White-throated species, both in the loud staccato call and in the sweet, low, tremulous notes."

Ashby recorded the species from Pungonda, South Australia, and a pair in the bull oak on the Victorian side: "They appear to be most silent birds;

WHITE-BROWED TREECREEPER.

although the birds were about, only once or twice in an hour was a whistle heard. The one shot in the pine scrub at Pungonda uttered a low chattering noise very similar to that of *C. scandens*."

Mellor then described this Pungonda bird, writing: "As might reasonably be expected a *Climacteris* inhabiting the pine and mallee country differs considerably from its ally in the arid districts of Central Australia. . . The birds were rare and very noiseless, being in marked contrast to the Southern Brown Treecreeper with which they were in company."

Whitlock met with this species on the East Murchison, Mid-west Australia, and has recorded: "Not at all common, and always met with in isolated pairs, chiefly in big mulga or casuarina country. In its habits it hardly differs from its congeners, and its notes are characteristic of the genus. Probably it has a song like *C. rufa*, but I never heard it—to recognise it, that is. . . The call note of this species is rather shrill and somewhat stridulant."

In connection with *C. rufa* I have already printed Whitlock's later notes, where he contrasts the distribution of the two species in Western Australia.

As regards the scientific history I have already printed Blyth's description, and my selection of Broken Hill as the type locality of Blyth's species. This will leave the name *superciliosa* to be borne by the Central Australian form and, if the Pungonda bird differs from the Broken Hill bird, Mellor's name will also be available.

Mellor stated: "Compared with North's description . . . the Southern form is altogether more robust, and the coloration differs considerably from the Central Australian bird, being more greyish above; crown of head and fore-head being uniform dark grey; no wash of brown on the grey upper tail-coverts; subterminal band on tail black; no buffy-brown on sides of body and centre of abdomen; and dull white in place of buffy-white on under tail-coverts, which are 'barred' with black spots."

North's description of *Climacteris superciliosa* reads: "*Adult male*. Like the male of *C. erythrops*, but differing from that species in having a smaller bill; the crown of the head greyish-brown instead of blackish-brown; the band through the wing rich buff instead of pale greyish-buff; the ear-coverts greyish-black streaked with white instead of uniform greyish-brown; and the orbital region and superciliary stripes pure white instead of rusty-red. Total length 5.7 inches; wing 3.55; tail 2.55; bill from fore-head 0.6, from gape 0.73; tarsus 0.73. *Adult female*. Like the male in colour, but having the white superciliary stripes margined above by narrower lines of rusty-red and the feathers on the centre and lower part of the fore-neck dull white edged with pale rusty-red. Illara Creek, Central Australia."

This bird inhabits the mulgar country of Western New South Wales.

THE BIRDS OF AUSTRALIA.

When I prepared my "Reference List" I regarded this as a subspecies of *C. erythropus*, and also added:

Climacteris erythropus neositta.

"Differs from *C. e. superciliosa* in being more reddish-brown on the back. Callion, West Australia."

Although F. E. Howe in his recent "Review" has stated: "I consider skins from Central Australia and Western Australia cannot be separated from the dominant form," meaning thereby that he concludes that the Central and Mid-west Australian birds are inseparable, I find that my character holds good when a series collected by Shortridge in Western Australia is examined, and moreover these appear to have even smaller bills and generally smaller measurements.

As I now regard the White-browed forms to constitute a species distinct from the Red-browed birds, the naming of these must be reconsidered; and at present Mellor's form may be tentatively admitted.

The names will be:

Cormobates affinis affinis (Blyth).

Broken Hill District, New South Wales.

Cormobates affinis parsonsi (Mellor).

Adjoining parts of the Mallee of South Australia and Victoria.

Cormobates affinis superciliosa (North).

Central Australia.

Cormobates affinis neositta (Mathews).

Mid-west Australia.

Mr. A. J. Campbell suggests that Broken Hill was not discovered in 1863, yet the country about there had been discovered. There is no reason for rejecting *affinis* as the species name, when the description absolutely applies. If Broken Hill cannot be accepted, then I designate the type locality of *affinis* as Pungonda, South Australia.

GENUS — WHITLOCKA.

WHITLOCKA Mathews, Austral Avian Record,

Voi. I., pt. 5, p. 115, Dec. 24th, 1912.

Type (by original designation) *Climacteris melanura* Gould.

I DIAGNOSED this genus: "Differs from *Climacteris* in its shorter, stouter bill and stronger feet and comparatively much longer first primary; from *Neoclima* in its broader, heavier bill and longer first primary, though shorter wing."

This little Northern group is well distinguished by its dark coloration and delicate build, while in addition to the items above quoted the wing formula also differs.

This group seems to have a peculiar smell, which is not recorded in connection with other Climacterine birds, yet is most noticeable in the two species of this genus.

NOTE.—In Part II., p. 103, the third line from the bottom, "eyebrow distinct, smaller, *C. minor*," should be on a line by itself, and be a line higher.

Order PASSERIFORMES.

No. 622.

Family CLIMACTERIDÆ.

WHITLOCKA MELANURA.

BLACK-TAILED TREECREEPER.

(PLATES 503, 504.)

CLIMACTERIS MELANURA Gould, Proc. Zool. Soc. (Lond.), 1842, p. 138, Feb. 1843: Derby, North-west Australia.

Climacteris melanura Gould, Proc. Zool. Soc. (Lond.), 1842, p. 138, 1843; *id.*, Birds Austr., pt. XIV. (Vol. IV., pl. 97), March 1st, 1844; *id.*, Handb. Birds Austr., Vol. I., p. 604, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 191, 1878; Gadow, Cat. Birds Brit. Mus., Vol. VIII., p. 334, 1883; Ramsay, Tab. List Austr. Birds, p. 15, 1888; Hall, Key Birds Austr., p. 35, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 329, 1901; Hall, Emu, Vol. II., p. 53, 1902 (N.W.A.); Le Souëf, *ib.*, p. 91 (N.T.); North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 46, 1906; A. G. Campbell, Emu, Vol. VI., p. 181, 1907; Mathews, Handl. Birds Austral., p. 88, 1908; Whitlock, Emu, Vol. VIII., p. 182, 1909 (W.A.); Mathews, *ib.*, Vol. IX., p. 69, 1909 (N.W.A.); Crossman, *ib.*, Vol. X., p. 112, 1910 (N.W.A.); Hill, *ib.*, p. 282, 1911 (N.W.A.); G. F. Hill, *ib.*, Vol. XII., p. 259, 1913 (N.T.); Macgillivray, *ib.*, Vol. XIII., p. 175, 1914 (N.T.); Barnard, *ib.*, Vol. XIV., p. 48, 1914 (N.T.); H. L. White, *ib.*, Vol. XVI., p. 226, 1917 (N.T.); F. E. Howe, *ib.*, Vol. XXI., p. 38, 1921 (Review).

Climacterus melanura melanura Mathews, Nov. Zool., Vol. XVIII., p. 381, Jan. 31st, 1912.

Climacteris melanura alexandræ Mathews, *ib.*: Alexandra, Northern Territory.

Whitlocka melanura melanura Mathews, List Birds Austr., p. 251; *id.*, South Austr. Orn., Vol. 3, p. 205, 1915.

Whitlocka melanura alexandræ Mathews, *ib.*

WHITLOCKA WELLSI.

Climacteris wellsi Grant, Ibis (Oct. No.), 1909, p. 664, reed. B.M. Sept. 27th, 1909: Clifton Downs, West Australia; Campbell, Emu, Vol. X., p. 299, 1911 (eggs).

Climacteris melanura wellsi Mathews, Nov. Zool., Vol. XVIII., p. 381, Jan. 31st, 1912.

Whitlocka melanura wellsi Mathews, List Birds Austr., p. 251, 1913.

Whitlocka wellsi striata Mathews, Bull. Brit. Orn. Club, Vol. XLIV., p. 15, Nov. 5th, 1923: Shaw River, Mid-west Australia.

Whitlocka wellsi wellsi, Mathews, *ib.*



H. Gronvold, del.

Witherby & Co.

WHITLOCKA MELANURA.
(BLACK-TAILED TREECREEPER).

NATURAL MUSEUM MELBOURNE

BLACK-TAILED TREECREEPER.

DISTRIBUTION. Northern Australia, ranging down on the west as far south as the Upper Gascoyne River, and eastwards to the Gulf Country of Queensland.

Adult male. Fore-part of head, including the lores and crown, blackish, becoming coffee-brown on the hind-neck, sides of face, sides of neck, and sides of breast; back, rump, upper tail-coverts, tail, scapulars, and upper wing-coverts black; bastard-wing, outer-webs and tips of primary-quills dark hair-brown, inner-webs of flight-quills buffy-white, secondary quills similar to the back; rectal-bridles black but only feebly developed; throat and fore-neck black with white shaft-lines to the feathers; breast, abdomen, thighs, and vent umber-brown; under tail-coverts black marked with white at the tips; axillaries similar to the abdomen; under wing-coverts grey tinged with buffy-white; under-surface of flight-quills hair-brown on the apical portion and cream-white at the base; lower aspect of tail similar to its upper-surface. Total length 173 mm.; culmen 15, wing 99, tail 74, tarsus 25. Collected at Derby, North-west Australia, on the 26th of June, 1886.

Adult female. Top of head and lores soot-black; sides of face, sides of hinder-crown, hind-neck, and sides of neck very dark chocolate-brown with pale shaft-lines to the feathers on the ear-coverts; back, scapulars, rump, upper tail-coverts, tail, and upper wing-coverts black, becoming paler and inclining to hair-brown on the bastard-wing and outer webs and tips of the primary-quills; inner webs of flight-quills buffy-white on the basal portion; secondary-quills darker and more like the back; rectal-bridles black and numerous but only feebly developed; chin and throat white; fore-neck also white with broad chestnut margins to the feathers; sides of breast and upper sides of body umber-brown, becoming paler and inclining to smoke-brown on the breast; abdomen, thighs, flanks, and under tail-coverts black, slightly marked with whitish on the terminal portion of some of the feathers; axillaries similar in colour to the abdomen; under wing-coverts white marked with pale brown; under-surface of flight-quills hair-brown, cream-white on the basal portion; lower aspect of tail similar to its upper-surface but paler. Eyes dark brown, bill, legs and feet black. Total length 164 mm.; culmen 15, wing 92, tail 70, tarsus 23. Figured. Collected at Derby, North-west Australia, on the 21st of June, 1886. (Plate 504.)

Adult male. General colour of the upper-surface black, including the top of the head, back, wings, and tail; crown of head and hind-neck more soot-black than the back; primary-quills dark brown on the apical portion, a broad band of buff across the flight-quills; sides of face and sides of neck dark coffee-brown with pale shaft-lines on the ear-coverts; fore-part of head minutely dotted with whitish; chin, throat, and fore-neck streaked with black and white; breast and abdomen smoke-brown with blackish shaft-streaks, becoming darker on the sides of the body, where it is almost uniform and inclining to blackish on the lower flanks and thighs; under tail-coverts black tipped with white; axillaries and under wing-coverts white, or buffy-white barred with dark brown; under-surface of flight-quills dark brown on the apical portion and buffy-white at the base; lower aspect of tail black like its upper-surface with obsolete cross-bars. Eyes brown, bill and feet black. Total length 197 mm.; culmen 14, wing 97, tail 70, tarsus 25. Figured. Collected at Alexandria, Northern Territory, in May 1905, and is the type of *C. m. alexandrae*. (Plate 503, bottom figure.)

Immature. General colour, both on the upper and under-surface deep black, including the top of the head, entire back, wings, tail, and upper wing-coverts; some of the flight-quills inclining to dark brown towards the tips; a buffy-white band across the primary and secondary-quills, chiefly on the inner-webs; throat black with white bases to the feathers; sides of face, sides of neck, breast, abdomen, thighs, under tail-coverts and axillaries also black; under wing-coverts whitish intermixed

THE BIRDS OF AUSTRALIA.

with black on the margin of the wing; under-surface of flight-quills blackish-brown with whitish bases; lower aspect of tail similar to its upper-surface; bill fleshy-white, culmen and operculum brown, eyes pale greyish-brown, feet and tarsi leaden-blue. Figured. Collected at Derby, North-west Australia, on the 12th of November, 1910. (Plate 503, top figure.)

Immature males "are brownish-black above and below, with narrow white streaks to the feathers on the throat; fore-neck and centre of the upper breast ferruginous-brown; under tail-coverts blackish-brown with subterminal spots of white." (North.)

The following descriptions refer to *Whitlocka wellsi* (Plate 503, middle figure ♀, plate 504 ♂):—

Adult male. General colour of the upper-surface dark chocolate-brown, including the top of the head, nape, hind-neck, back, scapulars, and wings, most of the feathers have dusky bases; inner-webs of flight-quills orange-buff on the basal portion; upper tail-coverts and tail darker than the back and inclining to black, but slightly paler at the tips of the tail-feathers; sides of face and sides of neck similar to the top of the head but rather paler; rictal-bristles black but only feebly developed; chin, throat, and fore-neck black with white shaft-lines to the feathers; breast, abdomen, sides of body, thighs, and vent dark chestnut with pale shaft-lines to many of the feathers, some of which have dark fringes; lower flanks blackish-brown; under tail-coverts blackish-brown tipped with white; axillaries similar to the breast; under wing-coverts buffy-white marked with dark brown; under-surface of flight-quills hair-brown at the tips and buff on the basal portion; lower aspect of tail similar to its upper-surface but somewhat paler and having white shafts to the feathers towards the base. Eyes brown, feet black, bill blackish-brown. Total length 173 mm.; culmen 13, wing 95, tail 67, tarsus 24. Figured. Collected on the Strelly River, Mid-west Australia, in September 1907, and is *Whitlocka wellsi* (Grant). (Plate 504.)

Adult female. Entire crown of head, including the fore-head soot-black; hind-neck, sides of neck, and mantle dark smoke-brown; back, rump, upper tail-coverts, and scapulars black; tail black with obsolete cross-bars and pale tips to the feathers; upper wing-coverts brownish-black; bastard-wing and short outer primary dark brown edged with white; primary-coverts black like the greater coverts; flight-quills dark brown with a broad band of buff across both series; innermost secondaries blackish with obsolete cross-bars; sides of face smoke-brown dotted with chestnut, and pale shaft-lines to the ear-coverts; chin and throat white; fore-neck also white with chestnut fringes to the feathers; breast and sides of body chestnut-brown with pale shaft-streaks; abdomen cinnamon with narrow streaks of white and black, becoming almost uniform chestnut-brown on the vent and thighs; under tail-coverts black marked with white on the apical portion; axillaries and under wing-coverts buff like the base of the flight-quills, the apical portion of the last blackish-brown; lower aspect of tail black with pale tips to the feathers. Eyes brown, bill and feet black. Total length 160 mm.; culmen 14, wing 93, tail 65, tarsus 23. Figured. Collected on the Shaw River, Mid-west Australia, in May 1908, and is the type of *W. w. striata*. (Plate 503, middle figure.)

Eggs. Two eggs usually form the clutch. A clutch of two eggs taken at Borroloola, McArthur River, Northern Territory, on the 19th of November, 1913, is of a pinkish-white ground-colour, spotted, blotched, and speckled with numerous and well-distributed markings of pinkish-red and purple, forming a cap at the larger end of each egg. Roundish ovals in shape; surface of shell smooth and slightly glossy. 23-24 mm. by 17.

The eggs of *C. wellsi* are similar to the above.



H Gronvold. del

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WHITLOCKA WELLSI
 (ALLIED BLACK-TAILED TREECREEPER)
 WHITLOCKA MELANURA
 (BLACK-TAILED TREECREEPER)
 CLIMACTERIS RUFA
 (RUFIOUS TREECREEPER)

04

NATIONAL MUSEUM MELBOURNE

BLACK-TAILED TREECREEPER.

Nest. Placed in the hollow spout or trunk of a tree, and composed of fur, soft bark and grasses.

Breeding-months. September to January.

THIS peculiar little group of Treecreepers for which I have proposed the genus *Whillocka* comprises two distinct species, both of which were described by Gould, and of this species he wrote: "I formerly believed that all the members of this genus were confined to the southern portions of Australia, but that such is not the case is proved by the circumstance of Mr. Bynoe having killed this bird on the northern coast. It exceeds all the other species in size, and also differs from them in its colouring, particularly in the lanceolate feathers on the throat and in the black colour of the tail. Nothing whatever is known of its habits or general economy, but, judging from its structure, it doubtless closely assimilates to its congeners in all these particulars."

Mr. J. P. Rogers has written me: "Several of these birds were seen near Jegurra Creek, 12 miles from Mungi, but none were seen at Mungi itself. On my way down Jegurra and the Fitzroy River occasionally small parties were seen. Is not very numerous in West Kimberley, where it is usually found in coolibar flats on the Fitzroy and on other large timber in other localities, but undoubtedly the favourite spots are the first-mentioned."

Stalker's note from Alexandra reads: "These birds feed on a species of small black ant, eating them on the trees."

G. F. Hill has recorded: "I saw these birds only amongst the large timber in the dry localities near Napier Broome Bay, where they were rare and difficult to approach. Young birds were seen in the middle of October. The female is distinguished by a white throat and rufous colour of lower throat, where it is black in the male. The crops of all specimens examined contained only numerous remains of one species of ant (*Iridomyrmex detectus* Smith). The nature of their food, I think, accounts for the peculiar odour possessed by these birds."

Macgillivray reported: "Numerous throughout the Gulf country, especially on river flats of the Leichhardt, which are clothed in bloodwood, wattle, bauhinia, and silver box. A spring breeder. Stomach contents: small beetles, ants, and other insects."

Barnard, regarding the McArthur River, Northern Territory, added: "These birds were common on the coastal rivers, and were generally in pairs; at odd times three birds were seen together. A number of nests was found."

McLennan found it "Fairly plentiful in forest at King River."

In the preparation of my "Reference List" I selected as the type locality of *Climacteris melanura*, which was described from the North-west Coast of Australia, Derby, and this is still accepted.

THE BIRDS OF AUSTRALIA.

I ranked as a subspecies the form Grant described as *C. wellsi* and added :

Climacteris melanura alexandræ.

"Differs from *C. m. melanura* in being much paler below.

Alexandra, Northern Territory."

These have been upheld by F. E. Howe in his recent Review, where he added more differential features as regards the normal forms, and as I do not conclude the values of these forms of Treecreepers as yet fixed I am quoting Howe's remarks as well as giving Grant's description of his *C. wellsi*, as that may yet prove to deserve specific rank.

Ogilvie-Grant described a new species, *Climacteris wellsi*, thus: "Adult male. Most nearly allied to the male of *C. melanura* Gould, but at once distinguished by having the general colour of the under-parts chestnut instead of brown, and the middle of the breast rufous-buff (not smoky-buff) with white, black-edged shaft-streaks. The under tail-coverts are black, strongly barred with white, instead of black narrowly tipped with white. In other respects the plumage is very similar to that of *C. melanura*. Adult female. Differs from the female of *C. melanura* in a similar manner to the male described above. Wing ♂ 3.7-3.85 inches, tail 2.7. Clifton Downs."

C. wellsi was only met with on the Upper Gascoyne River, where it was plentiful among the Eucalyptus and other trees which fringe the river-beds and water-courses."

Whitlock, writing of the Pilbarra Goldfield, stated: "Native name 'Chinin-chinin.' The only Treecreeper in the district. I first noticed it at the crossing of the Shaw River, where I obtained a female. On the upper Coongan it was extremely rare, but in a secluded gully I found a pair and after some trouble watched the female to her nest in the cavity of a very small gum growing on a stony hillside. . . . On the lower Coongan this species was a little more common, and I saw a young brood of three on the wing the first week in October. On the de Grey too, this Creeper was not uncommon, and I watched a female to her nest in a lofty and half-dead gum tree. . . . This species haunts the cajaputs as well as the eucalypts."

Howe has written: "The skins (perhaps those collected by Whitlock) are much smaller than the dominant form, and are more rufous on the breast and abdomen in both sexes. A juvenile skin is without the radiated breast-markings, merely showing a trace of the gular striations at the base of the bill. . . . *W. m. alexandræ*. The male differs from the dominant form in having the radiated breast-markings extending practically right down the abdomen, but the greatest difference is in the females. The gular patch of *W. m. melanura* is snowy-white, as are also the centres of the breast-feathers with their bright red edges, but in *W. m. alexandræ* the throat and upper breast are a dingy or

BLACK-TAILED TREECREEPER.

greyish-white, as are also the centres of the breast-feathers. The ear-coverts of *W. m. alexandræ* are brownish-black with white shaft-stripes, but in *W. m. melanura* the ear-covert striations are of buff."

This leaves the three forms and names as in my 1913 "List":

Whillocka melanura melanura (Gould).

North-west Australia.

Whillocka melanura wellsi Grant.

Mid-west Australia.

Whillocka melanura alexandræ Mathews.

Northern Territory and North Queensland
(Gulf Country).

FAMILY—ZOSTEROPIDÆ.

GENUS—ZOSTEROPS.

- ZOSTEROPS Vigors and Horsfield,
Trans. Linn. Soc. (Lond.),
Vol. XV., p. 234, Feb. 17th,
1827. Type (by monotypy) *Zosterops dorsalis* Vigors and Horsfield.
- Luteozosterops* Mathews, Austral
Av. Rec., Vol. V., pts. 2-3,
p. 36, Feb. 21st, 1923.
Type (by original designation) *Zosterops albiventris cairncrossi* Mathews.

THIS group, which has an extensive range through Africa, South Asia, Australia and the Pacific Islands, has been given Family Rank since Sharpe wrote: "An examination of the tongue of *Zosterops* shows that it resembles that of a Tit and has no similarity to the 'brush' tongue of the Honeysucker." For the present, although it has a brush tongue, I am inclined to keep the White-eyes as a separate family. Sharpe did not give the name of the species he examined, and this statement has been accepted since without criticism, though many years before, Blyth, a very accurate and reliable ornithologist, had published the fact that the *Zosterops* from Mauritius had a brush tongue, and after that the Indian *Zosterops* (*nicobaricus* and *curvirostris*) had brush tongues, as also other Indian genera (i.e., *Yuhina*) had brush tongues. Australian ornithologists have long been familiar with the fact that their *Zosterops* had brush tongues, several correspondents having sent me specimens, so that now the problem appears to be to find a *Zosterops* without a brush tongue. It has been noted in African, Asian and Australian species, so it is difficult to suggest where to look.

Nevertheless, the family should be retained as it is a compact, well-defined group with a wide distribution, while the Melithreptidæ, the Australian Honey-eaters, with which it only could be merged, comprises many varied elements and is obviously heterogeneous; the brush tongue being a character of little value in comparison with many other factors that are present in the group.

ZOSTEROPS.

The bill is short, shorter than the head, conical, pointed, tip sharp, fairly slender, culmen gently arched, basally keeled, depth of both mandibles at the base about equal to its width; nostrils a linear slit in a short nasal groove, a prominent operculum present; no nasal bristles, but the feathers of the fore-head encroaching a little on the nasal groove; lower mandible not quite as stout as the upper, the interramal space triangular, short, feathered, less than half the length of the mandible; rictal bristles weak and obsolete; tongue brushed; the wing long, with the feathers narrow, the secondaries fairly long; in the typical species the first (really the second) primary is about equal to the fourth, longer than the fifth and a little exceeded by the second and third, which are subequal and longest; the real first primary is very minute, entirely hidden by the coverts; not the outer primary, but the succeeding three, are incised on their outer webs for the apical half.

The tail is long, straight, almost emarginate; the upper tail-coverts long, extending more than half the length of the rectrices.

The legs are comparatively short and slender, the front of the tarsus more or less boldly scutellate, five scutes being counted, the hinder part bilaminate, the outer lamina with a tendency to fusion with the acrotarsium; the toes delicate, the claws small, the hind-toe a little stronger with a stouter claw; the hind-toe and claw a little less than the middle toe and claw, the inner toe a little less than the outer, but with claw just reaching to the length of the middle-toe alone; the toes are almost free from each other basally.

As pointed out by Castelnau and Ramsay, their *Z. gulliveri* has a much more rounded wing than the typical *Zosterops*, and I find that my *Z. albiventris cairncrossi* is even more rounded, the primaries being only a little longer than the secondaries and equal to the seventh; the second, third, and fourth subequal and longest, but the fifth and sixth very little shorter. In this form the tarsus is comparatively weaker and anterior toes more delicate, but the hind-toe stouter. I have proposed the subgeneric name *Luteozosterops* to indicate this difference.

Apparently the immature birds resemble the adult.

Key to the Species.

Back grey; throat grey or only tinged with yellow	<i>lateralis</i>
Throat and under tail-coverts yellow	<i>albiventris</i>
Back green, throat only yellow	<i>australasiæ=gouldi olim</i>
All under-surface yellow	<i>lutea</i>

Order PASSERIFORMES.

No. 623.

Family ZOSTEROPIDÆ.

ZOSTEROPS LATERALIS.

WHITE-EYE.

(PLATE 505.)

SYLVIA LATERALIS Latham, Index Ornith. Suppl., p. lv. (after May), 1801 : (Sydney) New South Wales.

Sylvia lateralis Latham, Index Ornith. Suppl., p. lv., 1801.

Rusty-sided Warbler Latham, Gen. Synops. Birds, Suppl. II., p. 250, 1801.

Zosterops dorsalis Vigors and Horsfield, Trans. Linn. Soc. (Lond.), Vol. XV., p. 235, Feb. 17th, 1827 : New South Wales (Sydney) ; Gould, Birds Austr., pt. xi. (Vol. IV., pl. 81), June 1st, 1843 ; S. A. White, Emu, Vol. XIV., p. 142, 1915 (Mallacoota) ; Cheney, *ib.*, p. 211 (Vic.) ; Purnell, *ib.*, Vol. XV., p. 43, 1915 (Vic.) ; Dove, *ib.*, p. 234, 1916 (Tas.) ; Le Souëf and Macpherson, *ib.*, Vol. XX., p. 89, 1920 (N.S.W.) ; Macgillivray, *ib.*, p. 93 (N.S.W.).

Dacnis westernensis Quoy and Gaimard, Voy. de l'Astrol. Zool., Vol. I., p. 215 (pref. June 29th), 1830 : Western Port, Victoria.

Zosterops lateralis Gray, Annals Mag. Nat. Hist., Vol. XI., p. 193, 1843 ; North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 209, 1906 ; Mellor and White, Emu, Vol. XII., p. 163, 1913 (Flinders Island) ; Agnew, *ib.*, Vol. XIII., p. 96, 1913 (Q.) ; Littlejohn, *ib.*, Vol. XXI., p. 143, pl. xxviii., 1921 (Vic.).

Zosterops cerulescens Strickland, Ann. Mag. Nat. Hist., Vol. XI., p. 336, 1843 : [Not *Certhia cerulescens* Latham, Index Ornith. Suppl., p. xxxviii., 1801.] Bonaparte, Consp. Gen. Av., Vol. I., p. 398, 1850 ; Gould, Handb. Birds Austr., Vol. I., p. 587, 1865 ; Ramsay, Proc. Zool. Soc. (Lond.), 1875, p. 598 ((N.Q.) ; *id.*, Proc. Linn. Soc., N.S.W., Vol. II., p. 191, 1878 ; Sharpe, Cat. Birds Brit. Mus., Vol. IX., p. 152, 1884 ; Legge, Paper Proc. Roy. Soc. Tasm., 1886, p. 241, 1887 ; Ramsay, Tab. List. Austr. Birds, p. 14, 1888 ; Hall, Key Birds Austr., p. 38, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 347, 1901 ; Littler, Emu, Vol. I., p. 12, 1901 (Tas.) ; H. E. Hill, *ib.*, Vol. II., p. 165, 1903 (Vic.) ; A. G. Campbell, *ib.*, p. 207 (King Island) ; Morgan, *ib.*, Vol. V., p. 225, 1906 (Kangaroo Island) ; Dove, *ib.*, Vol. VI., p. 53, 1906 (Tas.) ; *id.*, *ib.*, p. 138, 1907 (Tas.) ; MacLaine, *ib.*, Vol. VII., p. 192, 1908 (Tas.) ; Mathews, Handl. Birds Austral., p. 89, 1908 ; Chisholm, Emu, Vol. VIII., p. 35-38, 1908 (Vic.) ; S. A. White, *ib.*, p. 162, 1909 (S.A.) ; Broadbent, *ib.*, Vol. X., p. 239, 1910 (N.Q.) ; Littler, Handb. Birds Tasm.,



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ZOSTEROPS LATERALIS
(WHITE-EYE)

NATIONAL MUSEUM MELBOURNE

WHITE-EYE.

- p. 52, 1910 ; Mathews, Nov. Zool., Vol. XVII., p. 504, 1910 ; Cleland, Emu, Vol. XI., p. 89, 1911 (Food) ; *id.*, *ib.*, Vol. XII., p. 14, 1912 (Food) ; Dove, *ib.*, Vol. XVIII., p. 134, 1918 (Tas.).
- Zosterops australis* Ramsay, Ibis, 1863, p. 180. *Nom. nudum.*
- Zosterops ramsayi* Masters, Proc. Linn. Soc. N.S.W., Vol. I., p. 56, Feb. 1876 : Palm Island, Torres Straits ; Ramsay, *ib.*, Vol. II., p. 191, 1878 ; *id.*, Tab. List Austr. Birds, p. 14, 1888 ; Hall, Key Birds Austr., p. 38, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 349, 1901 ; Mathews, Handl. Birds Austral., p. 90, 1908.
- Zosterops westernensis vegeta* Hartert, Nov. Zool., Vol. VI., p. 425, Dec. 9th, 1899 : Cape York, North Queensland ; Hall, Key Birds Austr., 2nd ed., p. 113, 1906.
- Zosterops westernensis westernensis* Hartert, *ib.*
- Zosterops halmaturina* A. G. Campbell, Emu, Vol. V., p. 143, Jan. 1st, 1906 : Kangaroo Island ; Hall, Key Birds Austr., 2nd ed., p. 113, 1906 ; Morgan, Emu, Vol. V., p. 225, 1906 ; Mathews, Handl. Birds Austral., p. 90, 1908 ; Mellor, Emu, Vol. XII., p. 40, 1912 ; S. A. White, *ib.*, p. 270, 1913 ; *id.*, *ib.*, Vol. XIII., p. 103, 1913.
- Zosterops vegeta* North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 212, 1907 ; Mathews, Handl. Birds Austral., p. 90, 1908.
- (?) *Zosterops bowiae* Horne, Emu, Vol. VII., p. 36, July 1st, 1907 : Morang, Vic. ; Mathews, Handl. Birds Austral., p. 90, 1908 ; Mathews, Nov. Zool., Vol. XVIII., p. 384, 1912.
- Zosterops lateralis bowiae* Mathews, Austral Av. Rec., Vol. II., No. 7, p. 136, 1915.
- Zosterops chlorocephalus* Campbell and White, Emu, Vol. X., p. 196, Dec. 1st, 1910 : Capricorn Group, Barrier Reef, Queensland.
- Zosterops lateralis lateralis* Mathews, Nov. Zool., Vol. XVIII., p. 385, 1912 ; *id.*, List Birds Austr., p. 252, 1913.
- Zosterops lateralis westernensis* Mathews, Nov. Zool., Vol. XVIII., p. 385, 1912 ; *id.*, List Birds Austr., p. 252, 1913 ; Belchor, Birds Geelong, p. 316, 1914 ; (Anon.), South Austr. Ornith., Vol. II., pt. 3, p. 62, 1915 ; S. A. White, Emu, Vol. XVI., pp. 14-76, 1916 (S.A.).
- Zosterops lateralis tasmanica* Mathews, Nov. Zool., Vol. XVIII., p. 385, Jan. 31st, 1912 : (Devonport) Tasmania ; *id.*, Austral Av. Rec., Vol. I., p. 103, 1912 ; *id.*, List Birds Austr., p. 253, 1913.
- Zosterops lateralis halmaturina* Mathews, Nov. Zool., Vol. XVIII., p. 385, 1912 ; *id.*, List Birds Austr., p. 253, 1913.
- Zosterops lateralis ramsayi* Mathews, Nov. Zool., Vol. XVIII., p. 385, 1912 ; *id.*, List Birds Austr., p. 253, 1913.
- Zosterops lateralis cornwalli* Mathews, Nov. Zool., Vol. XVIII., p. 385, Jan. 31st, 1912 : Mackay, Queensland ; *id.*, Austral Av. Rec., Vol. I., p. 61, 1912 ; *id.*, List Birds Austr., p. 253, 1913.
- Zosterops lateralis tephropleura* Mathews, Nov. Zool., Vol. XVIII., p. 386, 1912 ; *id.*, List Birds Austr., p. 253, 1913.
- Zosterops lateralis chlorocephala* Mathews, *ib.*, p. xxvi., 1913.

THE BIRDS OF AUSTRALIA.

Zosterops tephropleura Campbell and Barnard, Emu, Vol. XVII., p. 30, 1917 (N.Q.); Macgillivray, *ib.*, p. 203, 1918 (N.Q.).

DISTRIBUTION. Eastern Australia from Cape York to Kangaroo Island; South Australia and Tasmania.

Adult male. General colour of the upper-surface yellowish-green with grey bases to the feathers, including the top of the head, sides of face, hind-neck, back, rump, upper tail-coverts, and upper wing-coverts; flight-quills blackish-brown fringed with yellowish-green on the outer webs; tail hair-brown with yellowish-green margins to some of the feathers; lores and rectal-bristles black; eye-ring white; chin and throat cream-white with black hair-like tips to the feathers on the chin; fore-neck and sides of neck grey; middle of breast and middle of abdomen white; sides of breast, sides of body, and flanks fawn-colour; under tail-coverts pale yellow; under wing-coverts white; under-surface of flight-quills dark hair-brown with pale margins; lower aspect of tail greyish-brown, shafts of feathers white. Eyes hazel, feet flesh, bill purple-flesh. Total length 113 mm.; culmen 8, wing 60, tail 45, tarsus 18. Collected at Devonport, Tasmania, on the 12th of February, 1909, and is the type of *Z. l. tasmanica*.

Adult females from the same localities as the males are similar.

Adult female. General colour of the upper-surface yellowish-green with grey bases to the feathers, including the top of the head, hind-neck, back, rump, upper tail-coverts, and upper wing-coverts; flight-quills blackish-brown edged with green on the outer webs; tail-feathers dark hair-brown fringed with green on the outer webs; sides of face paler than the crown; lores and feathers in front of the eye black; chin and throat pale lemon-yellow; fore-neck and sides of neck grey; breast, abdomen, and sides of body fawn-colour; under tail-coverts very pale lemon-yellow; axillaries and under wing-coverts white; under-surface of flight-quills hair-brown with whitish margins; lower aspect of tail pale brown with white shafts. Eyes stone, feet slate, bill horn. Total length, 118 mm.; culmen 8, wing 62, tail 46, tarsus 17. Collected at Selby, Victoria, on the 1st of January, 1913.

Adult female. Entire top of head, nape, sides of face, sides of neck, hind-neck, rump, and upper tail-coverts dull citron-green like the upper wing-coverts and outer aspect of the flight-quills; back lead-grey; bastard-wing and inner webs of flight-quills dark brown with pale margins to the latter; tail-feathers hair-brown with pale edges to the inner-webs and citron-green on the outer ones; lores and a portion of the eye-ring black, the remaining portion of the latter white; chin and throat tinged with yellow; breast pale grey; middle of abdomen whitish like the under tail-coverts, axillaries, and under wing-coverts; sides of abdomen and sides of body pale chestnut; under-surface of flight-quills hair-brown with slightly paler margins; lower aspect of tail also hair-brown. Eyes hazel, feet and bill brown. Total length 120 mm.; culmen 10, wing 61, tail 46, tarsus 18. Figured. Collected at Auburn, Victoria, on the 16th of January, 1901. (Bottom figure.)

Adult female. Mantle and back pale slate-grey; head, wings, rump, and upper tail-coverts dull greenish-yellow; quills and tail-feathers brown edged with greenish-yellow on the outer-webs; sides of face and ear-coverts dull yellow, becoming brighter on the throat; a spot in front and under the eye blackish; breast and sides of breast ash-grey, becoming paler and inclining to ochreous on the flanks; middle of abdomen whitish; under tail-coverts tinged with yellow; axillaries and under wing-coverts white. Total length 109 mm.; culmen 11, wing 57, tail 44, tarsus 17. Collected on Kangaroo Island.

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Adult male. Entire top of head, sides of face, nape, hind-neck, rump, upper tail-coverts, upper wing-coverts, including the primary-coverts and outer margins of the flight-quills greenish-yellow; mantle, upper back, and sides of breast lead-grey, becoming paler on the middle of the breast and sides of the body and flanks; inner-webs of flight-quills blackish-brown edged with white; bastard-wing blackish; tail dark brown with whitish margins on the inner-webs, and greenish-yellow on the outer ones; eye-ring white with a line of black below and in front of the eye, which extends along the base of the lores; chin and throat yellow; middle of abdomen inclining to whitish tinged with yellow; thighs whitish; under tail-coverts lemon-yellow; axillaries and under wing-coverts white like the inner margins of the flight-quills below, remainder of the quill-lining dark brown; lower aspect of tail greyish-brown. Total length 115 mm.; culmen 11, wing 69, tail 50, tarsus 20. Figured. Collected on North-west Island, Capricorn Group, Queensland, on the 9th of October, 1910, and is the type of *Zosterops chlorocephalus*. (Middle figure.)

Adult female. Crown of head, sides of face, sides of neck, and hind-neck yellowish-green like the rump, upper tail-coverts, upper wing-coverts, and outer aspect of flight-quills; inner-webs of the last blackish with whitish margins; bastard-wing and outer-web of first primary inclining to black; upper back and scapulars pale lead-grey; tail dark brown with pale margins to the inner-webs and yellowish-green to the outer ones; lores and fore-part of eye-ring black, the hinder-portion of the latter white; breast grey, becoming paler and inclining to fawn-colour on the abdomen and sides of the body; thighs and under tail-coverts pale lemon-yellow; axillaries and under wing-coverts white; under-surface of flight-quills blackish-brown with whitish margins; lower aspect of tail hair-brown. Total length 107 mm.; culmen 10, wing 60, tail 40, tarsus 18. Figured. Collected at Mackay, North Queensland, and is the type of *Zosterops lateralis cornwalli*. (Top figure.)

Immature seem to take on adult plumage from the nest.

Eggs. Three to four eggs form the clutch. A clutch of four eggs taken at South Grafton, Clarence River, New South Wales, on the 27th of March, 1901, is of a pale bluish-green ground-colour. Ovals in shape; surface of shell smooth and slightly glossy. 15-17 mm. by 12.

Nest. A small, neat, cup-shaped structure, composed of fine grasses, horse-hair, etc., well matted and fastened together with cobweb and spiders' cocoons, and lined with fine grasses, and sometimes long pieces of hair from horses' tails. It is usually placed in the horizontal fork of a bush or small tree, from which it is suspended by the rim, and placed from 4 to 15 feet or so from the ground. Dimensions over all, $2\frac{1}{2}$ to 3 inches by $1\frac{3}{4}$ to $2\frac{1}{2}$ inches in depth; egg cavity $1\frac{3}{4}$ to $2\frac{1}{4}$ inches across by 1 to $1\frac{1}{2}$ inches deep.

Eggs. Two eggs appear to be the usual number laid by this species for a clutch. A pair taken at Stokes Bay, Kangaroo Island, South Australia, on the 18th of November, 1919, is of a pale bluish-green ground-colour. Rounded ovals in shape; surface of shell smooth, but without gloss. 15-16 mm. by 12.

Nest. A small cup-shaped structure similar to that of *Zosterops lateralis*, composed chiefly of grasses matted together with cobweb, and suspended from a small forked twig of a bushy shrub or small tree, and placed at heights varying from four to twelve feet or more.

Breeding-months. September to January or February.

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ALTHOUGH undoubtedly well-known to most of the earliest collectors, Gould's notes appear to constitute the first recorded field observations, as follows: "This bird is stationary in all parts of Tasmania, New South Wales, and South Australia, where it is not only to be met with in the forests and thickets, but also in nearly every garden. It even builds its nest and rears its young in the shrubs and rose-trees bordering the walks. Among the trees of the forest the beautiful *Leptospermum* is the one to which at all times this species evinces a great partiality. Its flight is quick and darting, and when among the branches of the trees it is as active as most birds, prying and searching with scrutinizing care into the leaves and flowers for the insects upon which it feeds. It is sometimes seen singly or in pairs, while at others it is to be observed in great numbers, on the same or neighbouring trees. It is of a familiar disposition, and utters a pretty and very lively song. . . . The sexes present no difference of plumage . . . throat greyish-white . . . flanks light chestnut-brown. . . . In some specimens the throat and sides of the head are wax-yellow, and the flanks are only stained with chestnut-brown."

Mr. F. E. Howe has written me: "Appears to be more common through the district from October to March; probably it migrates then further north and I don't remember seeing it after that month, although it is common about the Gardens of Melbourne in autumn and winter. It is very plentiful in Fern-tree Gully, and here in the titree or mimosa they love to suspend their pretty moss-bedecked nest. In it three pretty light blue eggs are usually laid, but on one occasion four were seen, and often only two. It is a most useful little creature and destroys great numbers of the larvæ of the Cup Moth. Breeding season extends from October to January.

Mr. Sandland wrote me: "This species is common at Burra but rare at Balah, South Australia."

Mr. H. Stuart Dove has sent me a fine long and valuable series of observations, some of which are quoted here: "A beautiful nest was found on October 23rd, just completed, but empty; on the 25th contained two pale blue eggs, that is, one laid on 24th, and second on 25th, and on 26th the third egg was laid and the female was sitting, thus clearly showing that the eggs were laid on successive days; I have seen it stated in a well-known bird-book that the eggs were laid on alternate days. On 6th November there were three blind, naked, flesh-coloured young just hatched. The female flew off the nest uttering alarm-notes, the male replying with a pretty bell-like note which I never heard used before, uttered several times from a bush near by; the female dashed through the Tea-tree close to me as if to intimidate me when I examined young. On 11th November the young had eyes closed, a few tufts of whitish down on head, bluish looking quills sprouting on wings and spinal tract; the

WHITE-EYE.

bare body is reddish-tinted, bills light-brown, yellow at gape, opened widely for food but no noise made (others found made a slight noise like 'wec-ee'). On 12th November the eyes were open, quills on wings progressing, female parent appears to do all the incubation; will not leave nest until nearly touched, and then sits near by uttering the sharp alarm note, while male further away makes a note like a tiny bell rapidly tinkled. On 13th the yellow-green tint of plumage could be seen on bodies of the young, wing-quills of blackish-grey, tails just sprouting, female parent very bold, sat in Tea-tree close to me while I examined young. On 14th Nov., heads beginning to feather, yellow-green of plumage on body beginning to look much like that of parents. On 16th the young left the nest, therefore incubation lasted eleven days, young occupied nest ten days. One, killed in some way, was found lying in Tea-tree twigs, and I here give the plumage of the young as they leave the nest:—Head yellowish-green, back the same, mantle ashy-grey, inter-webs of wing-quills yellowish-green, bill brown, legs grey; throat, breast and abdomen white, latter slightly tinged with buff, which is more distinct on flanks; tail $\frac{3}{4}$ inch long, blackish and tinged on edge of webs with yellow-green like wings; upper tail-coverts yellow-green, lower white with slight buff tint; total length, tip of bill to tip of tail $3\frac{1}{4}$ inch. White eye-circle fairly well defined." These observations were confirmed several times with exactly the same results and little variation as "the young was like the parent, except that there was a buff patch behind the eyes, and the white eye-circle was very ill defined, more like a bare ring where feathers were yet to grow. There seems a good deal of variation in this eye-ring in the fledglings, some on leaving nest having it well defined, others showing more like a bare surface; the tail was very short."

Dove also noted: "The males are very pugnacious at breeding-time; on 14th Oct. a number of the species flew into Tea-tree scrub, and two males in fine plumage, the buff on flanks showing conspicuously, began fighting in the branches and fell, locked together by their bills, into the tussocks beneath, where they separated. On 10th Nov. also I noticed two males fall out of a small tree locked in the same manner. On 16th June (midwinter) a large party of White-eyes occupied an extensive bush of Coast Wattle (*A. sophoræ*) and sang in chorus in a very charming way, making a surprisingly loud sound, which could be heard at a considerable distance. On 8th Nov. a male was singing vigorously, while perched by himself, a short strain oft repeated, not unlike that of some of the male Flame-breasted Robins, and quite different from the soft inward song heard from individuals at nesting time. The song heard to-day was more of the loud, joyous type, as when all sing in chorus, noted above.

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Captain S. A. White has written me : " This is a very numerous bird at times along the coastal belt. I have not observed it myself far inland, but have heard of it reaching as far north as Broken Hill. From January to March these birds are very plentiful in the orchards on the Adelaide plains and do some damage amongst soft fruits, mostly grapes, but I feel sure they do much more good. In years gone by they nested in numbers in the salt-water tea-tree and it was not uncommon to see two or three of their well shapen nests containing three or four bright blue eggs. Their cry is a short, mournful one, and often uttered upon the wing. This bird shifts to some distance according to food supplies. They visit the coastal sand-hills in the autumn in search of the ripe currants when that native bush is in full fruit, and often remain well into the winter when the last of the fruit has dropped off ; they are also fond of other berries. Their food consists of insects, fruit and many native berries and fruits : it is wonderful what large berries this little bird can swallow. I am quite sure that *Z. l. halmaturina* is not a good subspecies, for I have a very large series of birds and have many taken on the mainland with much deeper-coloured flanks than any I have seen on Kangaroo Island. *Z. l. chlorocephalus*. I found this bird plentiful on North-west Island and Tryon Island of the Capricorn Group. It is a sweet songster and I often sat and listened to its song amidst the dense tropical vegetation. They were nesting on the Islands during our visits ; insects and small berries seemed to constitute their food, the myaporum berry being much sought after."

Mr. L. G. Chandler's notes read : " These little birds are common throughout the State of Victoria. They are great pests in the orchard when the fruit is ripening and are so tame it is difficult to scare them away. They certainly must do an enormous amount of good by destroying noxious insects during the remainder of the year and in this way return good for evil. The young are fed on a varied diet of insects and fruit, and I have often watched the parent birds feeding their young on the green, unripe berries of the wild current bush, which seems a strange diet."

Mr. Thos. P. Austin has sent me from Cobbora, New South Wales : " Small flocks arrive here towards the end of the summer, when the grapes are ripe, but it is a very rare thing to see them in this district at any other time. I saw a pair in September, 1915, perched together like love-birds in a small tree growing on a scrubby rocky hill, this being the only time I have seen them in such country. In the Geelong district, Victoria, and about Sydney, they are very common, and a great pest in the orchards and vineyards, attacking all kinds of soft fruit. They are particularly fond of pears ; starting with a small hole they work their way inside, until there is nothing but the skin and core left. When a boy I have often watched them enter, then quietly walked up

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and caught them ; but almost at any time while feeding on fruit they become so fearless of man's approach they will almost allow themselves to be caught by hand. I have often tried to do this, but have never actually been successful, excepting as above mentioned. They have a little song, but more often their call is a monotonous single note."

Mr. E. J. Christian's notes read : " This little bird is found more commonly in the moister districts, though we get a few here, but they are not found in great numbers. He is called ' Silver Eye,' ' Ring-Eye ' and ' Blight-bird,' no doubt deserving the last on account of the work it does in orchards. It eats many larvæ of different moths and does good work amongst Aphis. It does not confine itself to fruit trees, but very often is found among the Acacias. These little birds generally go in small flocks of from three or four to eight or nine. Sometimes the flocks are larger, and in Tasmania I have seen flocks as big as fifteen to twenty. However, in most cases, the small flock seems to be the general rule. As they fly they call with rather a plaintive little note which to me has always a ring of sadness in it. However, sometimes when in the cool shade of a leafy tree on a warm day one can hear them singing a song very low and sweet. It does not carry far and one has to be right underneath the tree to hear and appreciate it."

A very nice account of this species has been published in the *South Australian Ornithologist*, and as it covers the economy so neatly I make no apology for quoting the major portion :

" Habits.—It spends most of its time in low trees and bushy undergrowth, congregating into small flocks in the autumn and winter, and separating into pairs for the breeding-season. It apparently appreciates civilization, being much commoner in gardens and orchards than in unsettled country. They are most fearless little birds : shooting, scarecrows, and every other means the gardener can devise, do not frighten them in the least.

" Food.—All soft fruits, especially figs, grapes, apricots, and olives. The full extent of the damage done by these birds is not so much the quantity eaten as the habit they have of pecking small holes in the most forward portion of the ripening fruit. They are also very destructive amongst strawberry and raspberry crops. Mistletoe berries and pepper-tree berries (*Shinus molle*) are also eaten. This accounts for seedlings of the latter tree coming up in places frequented by this bird, especially near water taps and other damp places where they drink. Insects are captured on the wing, the bird returning to its perch with the prize. In winter the principal food is aphides, the blight of fruit-trees and flowers ; in this respect they do much good. At this time they also work for insects on the ground.

" Flight. Quick and jerky. They do not fly more than a few yards except

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when migrating, when they travel long distances without settling. Some years ago they migrated to New Zealand and settled there. In that country they are thought much of as insect destroyers.

“Song.—The White-eye has several distinctive notes. When in search of food it utters a long-drawn plaintive call of three notes. The same call is uttered in flight, but is then shorter. The alarm call is a shrill short note, but is not loud. The true, or love, song is a beautiful sustained trilling warble with a considerable range of notes, but so low-pitched as to be inaudible at a short distance. They usually sing while resting in a thick bush in the heat of the day. It is quite pretty to see a pair of White-eyes sitting side by side on a twig, the male singing his best, and frequently looking at his mate to see if it is being appreciated. . . . The breeding-season lasts from July to December, two or three broods being reared. Sometimes two or three pairs will build in the same tree. . . . The White-eye is included (in South Australia ?) in the Third Schedule of The Birds' Protection Act of 1900, *i.e.*, totally unprotected. This is on account of its fruit eating proclivities.”

Mr. Frank Littler has sent me the following account: “This species frequents all sorts of country from heavily-timbered districts to cultivated orchards. It is principally during the autumn and winter months that the birds congregate in any numbers; often flocks of from a dozen to fifty, if not more, may be seen hunting for food in the fields. During the summer it moves in pairs or in a very small flock at most. It eats insects, seeds, small berries and fruit. It is very fond of the berry-like seeds of the grass palm. It is also a great destroyer of noxious insects. The movements of this bird when insect hunting are very rapid. It seems animated with the desire to devour as many as possible in the shortest possible time. It destroys the pear slugs just before they turn to pupæ in the ground. During the summer the song of the White-eye is somewhat feeble and uninteresting, but the opposite is the case during the colder months. I have often been astonished at the power and sweetness of its song. The flight of this species is fairly strong, and it may sometimes be seen flying in flocks at a great altitude.”

A delightful plea for this species was published in the first number of the *Emu* from the pen of Mr. Littler, where he urged that the good they did much counterbalanced their evil deeds.

Dove also contributed an article some five years later, also favourable to this species, though admitting that it does damage fruit, and later wrote: “As to the propensities of the White-eye for good or evil, observers are as widely separated as the poles. At the New South Wales Fruit Growers' Conference in 1890, James Norton, M.L.C., condemned our sprightly little friend as ‘the greatest pest which gardeners in this colony have to contend

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with; he seems to take a mischievous delight in sampling every fruit, without regard to his own wants.' ”

A. G. Hamilton, Mt. Kembla, said at the same Conference: “Although these little Honey-eaters are very destructive to grapes and stone fruit, they do an immense amount of good by clearing the trees of aphides in winter and early spring. A flock of them will peep and pry about a leafless tree and in a short time clear it of many obnoxious insects.” In Victoria, French marks it as one of the most destructive visitants to orchards and vineyards, while Robert Hall says: “It is the scourge of the aphid and other noxious insects when there is no fruit upon the tree,” and quotes Hill: “the White-eye is the chief enemy of the case moth, destroying the young larvæ in great numbers; indeed, but for these useful little birds the case moths might easily become a serious insect pest.”

Chisholm also reported favourably: “First of all, it is the great enemy of that most destructive pest, the fruit-tree aphid. I have frequently watched groups of White-eyes busily clearing aphids of various colours off all kinds of fruit trees. Each bird takes a certain branch area and works systematically, industriously, and well. I am always sorry to see them leave, for I consider them better and certainly cheaper than all spray pumps and other mechanical devices. . . I have also frequently watched this energetic little bird feasting on some small insect (name unknown to me) which causes a lot of damage among the rhubarb plants. And if this were not sufficient evidence to support its claim to the friendship and protection of the orchardist, it is a great enemy of the codlin moth and pear-tree slug—two of the greatest pests the grower has to contend with. . . Taking it on the whole, I can unhesitatingly affirm that (in this district, at all events) the good done by this much-maligned little bird far outbalances what little damage it may cause.”

Cleland has recorded the contents of the stomachs of a number of these birds killed in February, April, May, June, August and October, and all, even the one in October, showed remains of insects, sometimes associated with fruit juices and flowers.

Miss Cheney has also written from the Wangaratta District, Victoria: “Not very common. It seemed to be confined to certain orchards. There is a difference in opinion as to their value, but I think that the balance is in their favour.”

Recently Le Souëf and Macpherson writing up the Birds of Sydney, an invaluable little article as all the earliest named Australian birds were received from Sydney, stated: “The White-eyes (*Zosterops dorsalis*) are perhaps the most numerous of our local native birds.” (Contrast this with Watling's statement: “This is the only one of the kind ever seen.”) “They will be

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seen in any patch of greenery eagerly searching for insects, but they certainly come in for a good deal of condemnation from the fruit growers during summer. In the autumn they flock, and presumably a good many leave, but their place is probably taken by others from further south, for there are numbers with us all the winter. Flocks are not infrequently heard going over at night. A few years ago a flock of about 100 were making a great to-do one evening about sundown. Twice they started off, only to be recalled by waverers for further argument; for the third time the flock moved off, and got away about 100 yards, when with many shrill cries about one-third of them returned, but the main body kept on towards the north."

The technical history of this common species is somewhat complicated. In their account of Australian Birds in the Collection of the Linnæan Society, Vigers and Horsfield introduced a new genus *Zosterops* for a species of "Warbler" which they called *Zosterops dorsalis*, and recognised as the same species Swainson's *Sylvia annulosa* var *B*. Swainson wrote: "On first receiving this bird from New Holland, I was inclined to think it a distinct species from the African White-eyed Warbler, but further consideration has led me to adopt a different opinion; if true I am unacquainted with any one land bird which is common to both countries, and much weight should be attached to the geographic distribution both of families and species. These two birds, however, differ in their colour, and somewhat in their size. . . . On the whole, therefore, I am inclined to consider them as varieties of one species, forming a solitary exception to the general dissimilarity between the birds of Africa and those of New Holland." The coloured figure given is of the summer plumage.

Vigers and Horsfield had no hesitation in accepting the observed differences as of specific value and named it as above. Gould figured the species under Vigers' and Horsfield's specific name, their genus being universally accepted almost as soon as published.

When Gray examined the Lambert drawings he recognised the one upon which Latham had based his *Certhia cærulescens* as a *Zosterops*, indicating *Zosterops tenuirostris* Gould as the species; then from the Lambert figure of *Sylvia lateralis* Latham, Gray proposed to use *Zosterops lateralis* for the *Zosterops dorsalis* of Vigers and Horsfield.

Gould, apparently influenced by Strickland, determined *cærulescens* as also applicable to the present species, and as it had *anteriority of position* utilised it in preference to *lateralis*. Sharpe, when he monographed the Zosteropidæ for Gadow, in the ninth volume of the *Catalogue of Birds in the British Museum*, without reading the descriptions and without the paintings upon which they were based, used *cærulescens*.

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When Sharpe examined the Watling drawings he wrote :

"No. 110 Cærulean Creeper, Lath., Gen. Syn., Suppl. II., p. 169.

Certhia cærulescens Lath., Ind. Orn., Suppl., p. xxxviii.

Zosterops cærulescens Sharpe, Cat. B., IX., p. 152."

This is evidently intended for a *Zosterops*, but the colours are not very exact. The white eyelid is shown in Watling's drawing, which is of the "natural size." Latham does not mention the white eyelid in his description, which, however, is manifestly founded on Watling's picture, which thus becomes the type of *Z. cærulescens* (Lath.).

As we now know Latham's names were founded on the Lambert drawings, and it is notable that the Rusty-sided Warbler was not recognised by Latham among the Watling series, but instead is (still quoting Sharpe's account):

"No. 209 Ciliary Warbler, Lath. MS. ; *id.*, Gen. Hist. B., VII., p. 111 (1823).

Zosterops cærulescens (Lath.) Sharpe, Cat. B., IX., p. 152."

Watling gives the following note : "One-half the natural size. This little bird is the only one of the kind ever seen ; the white round the ciliary process of the eye is composed of the most beautiful small white feathers. The pride and vanity of the draughtsman has induced him to put his name to all the drawings, but should you publish them I think the name may be left out."

No. 210 Ciliary Warbler, Lath. MS. (Sec No. 209.)

Watling's note : "Three-fourths the natural size. The iris is doubtful." It will be noted that here Watling states he has put his name to *all* the drawings.

When Latham published his Ciliary Warbler he wrote : "Described from a fine drawing in the possession of Mr. Francillon," and notes two forms.

This suggests still another series of drawings, as Vieillot described from Francillon's drawings, but it has been hitherto conjectured that Francillon had been loaned the Lambert drawings, but this now seems doubtful.

I here reproduce both descriptions as this is of some importance :

"C(erthia) cæruleseens. C. fusea subtus incarnata, gula juguloque griseo-cæruleis, remigibus rectricibusque cæruleo-nigris Cærulean Creeper, Gen. Syn. Sup. II., p. 169, 32.

Habitat in Nova Hollandia : magnitudo *Sylvia* : rostrum tenue obscureum.

"Cærulean Cr(eeper). Size of the *White Throat* ; bill a trifle curved, but slender as in the *Warbler* genus, colour dusky ; the plumage on the upper part is pale brown, beneath pale flesh-colour ; fore parts of the neck pale blue-grey ; quills and tail dusky ; legs dusky. Inhabits *New South Wales*."

This description is not good.

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Latham's :

"*S(ylvia) lateralis*. *S. griseo-cærulescens subtus albida, alis uropygio reetieibusque lateralibus viridibus, loris nigris* Rusty-sided Warbler, *Gen. Syn. Sup. II.*, p. 250, 38.

Habitat in *Nova Hollandia*, parva species magnitudine *Troglodytis latera* eorporis ferruginea.

"Rusty-sided W(arbler). Size of a *Wren*; bill dusky; legs pale; the greater part of the head and wings, lower part of the back, and all except the two middle tail-feathers green; hind part of the neck, the beginning of the back, and the two middle tail-feathers blue-grey; under-parts of the body whitish, but the sides of it are ferruginous; between the bill and eye a narrow streak of black. Found with the last (New South Wales)."

This is an excellent account.

Quoy and Gaimard named and figured a bird from Western Port, Vietoria, just a little later than Vigors and Horsfield had introduced their genus *Zosterops*. Vigors and Horsfield's description reads:

"*Dorsalis*. *Zost. flavescenti-viridis, dorso cinereo, striga ante subtusque oculos nigra; subtus flaveseenti-albidus, gutture pallide flavo, abdominis lateribus ferrugineo tinctis. Remiges rectricesque fuscae, flavescenti-olivaceo marginatae, subtus pallidiores. Tectrices alarum inferiores albidæ. Orbitae plumulis albis vestitæ. Rostrum pedesque flavescenti-fusci. Longitudo eorporis, $4\frac{3}{5}$; alæ a carpo ad rennigen tertian, $2\frac{3}{10}$; caudæ $1\frac{9}{10}$; rostri ad frontem, $\frac{2}{5}$; ad rictum, $\frac{11}{20}$; tarsi $\frac{3}{4}$. Mr. Caley has not noticed the habits of this bird, beyond its having built its nest in a mulberry tree close to his house."*

Quoy et Gaimard's description reads: "*Dacnis, rostro conico, acutissimo; palpebris albis; gula genisque flavis; capite uropygio et alis virescentibus; dorso cinereo; abdomine flavo.*"

I have reprinted this description as it may prove important as the first description of the yellow-throated bird which Sharpe separated as a distinct species under the name *Z. westernensis* Q. and G., which was published three years later. This is the more strange as the type of Vigors and Horsfield's *Z. dorsalis* is in the British Museum. Quoy and Gaimard's figure appears to have been drawn from a young bird and much over coloured.

Sharpe used *cærulescens* for the white-throated form and *westernensis* for the yellow-throated one, regarding them as distinct species, and Hartert so accepted them. North, however, collected a series in the neighbourhood of Sydney which he contended proved that the yellow-throated form was only the spring and summer plumage of the white-throated one. North's conclusions were accepted by Australians and I have followed this usage, but

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in recent years many facts have tended to discount North's results, and I now suggest that the matter be reopened and as the bird is common, hurtful and not protected, sufficient material can be collected: not fifty skins, but five hundred from many localities and the facts determined.

Item No. 1. In Tasmania no yellow-throated birds occur and the young are the same as the adult.

Item No. 2. In January in Victoria both yellow- and white-throated birds occur.

Item No. 3. In Queensland only yellow-throated birds occur.

Item No. 4. On Lord Howe and Norfolk Islands the two forms occur as very different species.

Item No. 5. In New Zealand where this bird is supposed to have migrated from Australia all the birds examined agree in being white-throated, no yellow-throated birds being seen, though birds in juvenile and adult plumage, in summer and winter, have been examined.

It is somewhat difficult to disentangle the synonymy, and as the matter is *sub judice* I have left the references under the one name, but here indicate the ranges and distinctions of the two forms.

Masters nearly fifty years ago described *Zosterops ramsayi*: "Male. Crown of the head, neck, throat, wings, rump and under tail-coverts, greenish-yellow; lores, and a line beneath the eye, black; back and chest, bluish-grey; abdomen light grey, passing into very light buff on the flanks; eyes surrounded by a very large zone of white feathers; primaries and secondaries brownish-black, margined on their outer webs with yellow; beneath, on their inner webs, with white; tail, brown, margined with yellow; legs and feet bluish-grey; upper mandible brownish-black; under mandible horn-colour; irides brown. Total length 4.4; wing, 2.4; tail, 1.75; tarsi, 0.65; bill from fore-head, 0.5; from gape, 0.6."

Two specimens from Palm Island, Torres Straits: "Easily distinguished by the very large zone of white feathers surrounding the eye."

"Although they appeared to be tolerably numerous, we found it very difficult to obtain specimens as they frequented the highest trees in the dense scrubs."

Overlooking this description Hartert, twenty odd years later, named: "*Zosterops westernensis vegeta*. The *Zosterops* from Cape York differ from specimens from New South Wales and Victoria (the type is from Western Port in Victoria) in being smaller and the colours somewhat clearer. The flanks are less brown, the under tail-coverts bright sulphur-yellow instead of white, with a faint tinge of yellow, as in *Z. westernensis westernensis*. Iris light brown, feet dark slate-colour, bill black, bluish slate-colour towards the

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base of the lower jaw. Types shot in July, Cape York. The *female* is like the *male*; one of the *females* has a sulphur-yellow wash on the middle of the abdomen, ♂ wing 56–57, ♀ wing 56–57 mm. *Zosterops westernensis tephroleura*, from Lord Howe's Island, is more like the Cape York bird than like typical *Z. westernensis*, but larger, the wing more than 60 mm. *Zosterops westernensis flaviceps*, from the Fiji Islands, seems to differ constantly from the Australian forms of *Z. westernensis* by having light coloured feet and bills, though the colour of the plumage is very much like that of *Z. westernensis westernensis*."

It will be noted that Hartert here treated the yellow-throated form as a distinct species.

Later, A. G. Campbell in his memorable essay on the Birds of Kangaroo Island named *Zosterops halmaturina* (new subspecies): "Here, too, is an interesting link. *Z. caerulescens*, of South-eastern Australia, is characterized by its grey back, chestnut flanks, and greyish throat (sometimes tinged with greenish-yellow); *Z. gouldii*, of Western Australia, by its green back, greyish flanks, and yellow throat. The Kangaroo Island bird has grey back, greyish flanks, and yellow upper throat, thus linking one with another. The legs are of a very light horn-colour, and not grey-black; the bill is heavier—·4 in. against ·33 in.; wing is 2·25 in.; tarsus ·7 in. Withal it is quite a distinct variety."

North recorded: "The White-eye appeared to be the same as the ordinary species of South Australia (*Zosterops caerulescens*), the slight difference of coloration being attributed to seasonable changes," and wrote me to the same effect.

Broadbent recorded *Z. caerulescens* as "Common at Cardwell."

Campbell and White, reporting on the Birds of the Capricorn Group, wrote: "*Zosterops* were numerous and appeared to breed upon the islands, judging by a few old nests. As at some of our more southern camps, it was delightful to listen to the subdued chorus of the birds' sweet warbling songs at daybreak. Regularly on Mast Head they commenced to warble from 10 to 5 minutes before 5 o'clock. White-eyes were observed in great numbers on North-West and Tryon Islands, where, also, the nesting season had not yet commenced. Several skins were procured, the first by Mr. J. W. Mellor. From a critical examination of these skins it was at once noticeable that they are not referable to *Z. caerulescens*, but are more in agreement with the description of Quoy and Gaimard's *Z. westernensis*. Should further research prove them different, we venture to suggest the name *Z. chlorocephalus*, or Green-headed White-eye (on account of the 'clean-cut' markings of that colour), the following being the general description: *Male*. Distinct ring of silvery-white round

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the eye, succeeded by a black line under the eye; head, mantle, upper wing-coverts and upper tail-coverts bright olive-green; back grey, blending into the greenish mantle; wings and tail dark brown, the primaries and tail-feathers edged with bright olive-green; chin, throat and under tail-coverts greenish-yellow; rest of the under-surface greyish-blue, darkest on the chest, and approaching greyish-white on the abdomen. Bill dark brown, the basal half of the lower mandible lighter coloured; tarsus dark grey. Dimensions in inches: Length $4\frac{3}{4}$; wing $2\frac{11}{16}$; bill $2\frac{7}{8}$; tail 2; tarsus $\frac{11}{16}$."

Campbell and Barnard, recently reporting upon Birds from North Queensland, stated: "Whether the Roekingham Bay bird be a subspecies of *lateralis* (i.e., *dorsalis*) as Mathews contends, or not, it is the same kind of *Zosterops* that was obtained on the Capricorn Group by the Union's Expedition 1909, and provisionally named *Z. chlorocephalus*. These little birds were fairly plentiful in the coastal country, and their chirping songs were always heard at dawn, provided noises caused by wind, etc., did not drown the birds' voices."

Macgillivray also wrote: "This is the mainland Silver-eye. It was quite common along the edge of the scrub, whether bordering the open forest or overhanging the river. The broad ring around the eye is a conspicuous feature in this species. Curiously enough, although this bird is so common on the mainland, the type (of *Z. ramsayi*) is labelled as having been obtained on Palm Island, Torres Strait."

When I prepared my "Reference List" in 1912 I accepted North's conclusion that the yellow-throated and white-throated birds were referable to the same species and, therefore, arranged the subspecies thus:

Zosterops lateralis lateralis (Latham).

New South Wales.

I rejected *cærulescens* as inapplicable and synonymised *Z. dorsalis* Vigors and Horsfield.

Zosterops lateralis westernensis (Quoy and Gaimard).

Victoria, South Australia.

Zosterops lateralis tasmanica Mathews.

"Differs from *Z. l. lateralis* in having a much narrower grey mantle. (Devonport) Tasmania."

Tasmania.

Zosterops lateralis halmaturina A. G. Campbell.

Kangaroo Island.

Zosterops lateralis ramsayi Masters.

North Queensland (Cape York).

Of this I ranked *Z. westernensis vegeta* Hartert as synonymous.

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Zosterops lateralis cornwalli Mathews.

"Differs from *Z. l. ramsayi* in its larger size (wing 61 mm.) and less brilliant yellow on the vent. Mackay, Queensland."

Mid-Queensland.

Zosterops lateralis gouldi Bonaparte.

West Australia.

Zosterops lateralis tephroleura Gould.

Capricorn Group, Barrier Reef, Queensland.

"Note.—*Zosterops tephroleura* Gould, Proc. Zool. Soc. (Lond), 1855, p. 166, was described as from Lord Howe Island. The type specimen which I have now before me is the bird recently described by Campbell and White as *Zosterops chlorocephalus*, the types of which I have carefully compared with it. The only conclusion I can arrive at is that *Z. tephroleura* did not come from Lord Howe Island, but was collected somewhere on the Barrier Reef. In confirmation I may state that the specimen was received by Gould with birds from Lord Howe Island and also from the Barrier Reef sent from Cape York. Further evidence is that the specimen lacks Macgillivray's original label, and I therefore presume it arrived without such label and was erroneously credited to Lord Howe Island. Macgillivray's specimens are beautifully labelled and accurate, and that this specimen lacks data in itself causes suspicion as to its correct locality. I have seen no specimen at all like it from Lord Howe Island, and cannot trace any recent record."

In my 1913 "List" the same arrangement appears on pp. 252-3, but on p. xxvi the correction is made, as in the meanwhile I had received a series of the true *tephroleura* from Lord Howe Island, and though very similar there were slight differences seen which were constant in the series.

About the same time, dealing with birds from Flinders Island, Captain S. A. White recorded his conclusions: "I have minutely examined a large series of *Zosterops* from South Australia, Kangaroo Island, Tasmania, and Flinders Island, and I am of the firm opinion that *Z. lateralis*, *Z. westernensis*, *Z. tasmanica* and *Z. halmaturina* are not separable."

In the *South Austr. Ornithologist*, Vol. II., pt. 3, p. 62, 1915, a full account of the Silver-eye is given, and the writers (the article is anonymous) state: "The Kangaroo Island does not differ in any respect." Their description of the throat reads "greyish-white, washed with yellowish-green," which suggests the white-throated, not the yellow-throated form. No mention is made of any plumage changes, so that no conclusion can be arrived at as to whether they regarded the bird described by A. G. Campbell as a seasonal phase or not. I have also no record as to whether both white-throated and yellow-throated birds occur on Kangaroo Island.

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This leaves us at the following position :

Zosterops lateralis lateralis (Latham).

New South Wales, (?) Victoria, (?) South
Australia.

Zosterops lateralis tasmanica Mathews.

Tasmania, (?) Flinders Island.

Zosterops lateralis investigator subsp. nov.

New Zealand.

The New Zealand form is credited with arriving from Australia and spreading all over New Zealand. When Iredale and I drew up the Reference List of the Birds of New Zealand we noted that all the New Zealand birds were like Tasmanian ones and used the name of the Tasmanian subspecies. The green of the head is becoming more restricted, the grey on the back less, the flanks darker, the breast paler, the black lores more pronounced, the throat scarcely tinged with yellow, the bill longer. Whether these changes have taken place in the last sixty years or not I cannot say, but it is necessary to provide a name to attract attention to the fact that, according to the birds examined, a distinct form appears to be evolving. As above noted, only one stage of plumage has been seen, as yet, from New Zealand, viz., the so-called winter plumage.

All the rest of the Eastern White-eyes, as I now separate *Z. gouldi* the Western form as specifically distinct, are referable to the yellow green-throated series, of which I conclude the oldest name is *Z. dorsalis*, and hence I allow :

Zosterops dorsalis dorsalis Vigors and Horsfield.

New South Wales, (?) South Queensland
(Mainland).

Zosterops dorsalis westernensis (Quoy and Gaimard).

Victoria, South Australia.

Zosterops dorsalis halmaturina A. G. Campbell.

Kangaroo Island.

I am leaving this here until the matter of plumage changes is settled, as well as nature of South Australian mainland birds.

Captain S. A. White, reporting upon the Birds of Mallacoota, Victoria, has written : "Very plentiful. They were breeding in many localities. Several nests containing eggs were seen, and the eggs appeared to be a little larger than the average of those of the South Australian bird. On comparing the birds I find that the specimens from Mallacoota approach much more closely the Kangaroo Island bird (*Z. halmaturina*) than the mainland birds, the grey of the back and the yellow of the throat and head being much more pronounced than it is in either the South Australian or Bass Strait island birds."

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A little later, under the name of *Z. lateralis westernensis* he wrote: "Plentiful on the Althorpe Islands and at Pondalow Bay, on mainland, also on Wedge Island. I have not put this bird under *Z. l. halmaturina*, because I am quite sure the Kangaroo Island and mainland birds are the same."

Zosterops dorsalis chlorocephalus Campbell and White.

Capricorn Group, Barrier Reef, Queensland.

This is much the largest of the series.

Zosterops dorsalis cornwalli Mathews.

Mid-Queensland.

This is notably less than the preceding though somewhat similarly coloured.

Zosterops dorsalis ramsayi Masters.

North Queensland.

This is still less than the preceding and the white-eye ring is very pronounced.

Ramsay, fifty years ago, wrote: "The Queensland specimens of the species are frequently smaller than our New South Wales birds, and often of a brighter tint on the head and throat, the silver ring round the eye is comparatively larger and more conspicuous."

It is interesting in this connection to emphasize Ashby's note in connection with *Z. gouldi* written last year: "Almost the counterpart of the handsome yellow-throated species common in the tropical brush on the Northern Rivers, New South Wales, and which I have always identified as *Z. ramsayi*, except that the eastern bird has a grey back and the western one a green back."

The Cape York bird *Z. ramsayi* is a smaller form, but this recalls Campbell's record (*Nests and Eggs*, p. 351): "In examining the collection of Mr. S. A. White, Fulham (South Australia), I came across a *Zosterops* with a rather stout bill and conspicuous yellow throat, which I believe is referable to this species (*Z. albiventris*). It was shot by the late Mr. Samuel White in the Barrier Ranges, New South Wales."

These would be very near to typical *Z. dorsalis* of this account.

An extraordinary aberration was thus described by Dr. Horne: "About eighteen months ago Miss Bowie had in her aviaries a grey *Zosterops*, or White-eye. Unfortunately it died, and was destroyed by a pair of Amherst Pheasants. Last month (1907) we were fortunate enough to obtain another specimen from Morang (Victoria) where the bird-catcher tells me he has often seen them. It forms a marked contrast to *Z. caerulescens*—the olive-yellow being replaced by grey. The markings on the primaries are different and the abdomen darker. The wings are longer and the tarsus shorter than in *Z. caerulescens*, and the bird appears rather slighter in contour." Then Dr. Horne gave a complete description and named the variety *Zosterops bowie*.

When in Australia I was allowed the opportunity of examining this bird

WHITE-EYE.

and drew up the following description: "*Zosterops lateralis bowiae* Horne. The type has the upper-surface greyish; primaries dark brown, edged with grey; under wing-coverts white; throat and upper breast grey; abdomen and vent whitish; sides of the body brown as in normal birds; the grey of the back in normal birds extends all over the upper-surface in this one, but is darker than normal birds."

I have not noted any more records of this eccentric bird. It must be noted here that there is a great literature surrounding the colonisation of New Zealand by a species of *Zosterops*, and from all accounts this minute bird has the ability to cross large tracts of water, and also spreads quickly in favourable circumstances.

Order PASSERIFORMES.

No. 624.

Family ZOSTEROPIDÆ.

ZOSTEROPS AUSTRALASIÆ.

GREEN-BACKED WHITE-EYE.

(PLATE 506.)

SYLVIA AUSTRALASIÆ Vieillot, Nouv. Dict. d'Hist. Nat., nouv. ed., Vol. XI., p. 235, June 21st, 1817: King George's Sound, South-west Australia.

Sylvia australasiæ Vieillot, Nouv. Dict. d'Hist. Nat., Vol. XI., p. 235, June 21st, 1817.

Zosterops chloronotus Gould, Proc. Zool. Soc. (Lond.), 1840, p. 165, July 1841: West Australia=Perth(?); Gould, Birds Austr., pt. XI. (Vol. IV., pl. 82), June 1st, 1843.

Not *Dicaeum chloronotus* Vieillot, Nouv. Dict. d'Hist. Nat., nouv. ed., Vol. IX., p. 408, 1817, which is a species of *Zosterops*.

Zosterops gouldi Bonaparte, Consp. Gen. Av., Vol. I., p. 398, 1850 (before Feb. 1851): new name for *Z. chloronotus* Gould; Gould, Handb. Birds Austr., Vol. I., p. 588, 1865; Sharpe, Cat. Birds Brit. Mus., Vol. IX., p. 162, 1884; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 191, 1878; *id.*, Tab. List Austr. Birds, p. 14, 1888; Hall, Key Birds Austr., p. 38, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 350, 1901; Milligan, Emu, Vol. II., p. 73, p. 172, 1902-3; *id.*, *ib.*, Vol. III., p. 18, 1903; Carter, *ib.*, p. 91, 1903; H. E. Hill, *ib.*, p. 227, 1904; North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 212, 1904; Lawson, Emu, Vol. IV., p. 131, 1905; Gibson, *ib.*, Vol. VIII., p. 66, 1908; Mathews, Handl. Birds Austral., p. 89, 1908; Cleland, Emu, Vol. IX., p. 223, 1910 (Food); Mathews, List Birds Austral., p. 253, 1913; Orton and Sandland, Emu, Vol. XIII., p. 79, 1913; Alexander, *ib.*, Vol. XVI., p. 33, 1916; Carter, Ibis, 1917, p. 608; Campbell, Emu, Vol. XVIII., p. 263, 1919; S. A. White, *ib.*, Vol. XX., p. 128, 1921; Ashby, *ib.*, p. 135; Mellor, *ib.*, p. 139; Alexander, *ib.*, p. 167; Whitlock, *ib.*, p. 186.

Zosterops shortridgii Ogilvie-Grant, Ibis, 1909, p. 663 (Oct. No., reed. B.M. Nov. 27th, 1909): Rabbit Island, Albany, South-west Australia; Whitlock, Emu, Vol. X., p. 317, 1911.

Zosterops lateralis gouldi Mathews, Nov. Zool., Vol. XVIII., p. 386, 1912.

Zosterops gouldi warreni Mathews, Austral Avian Record, Vol. III., pt. 3, p. 62, April 7th, 1916: Warren River, South-west Australia.

Zosterops australasiæ Mathews, *ib.*, Vol. V., pts. 2-3, p. 36, 1923.

Zosterops australasiæ edwini Mathews, *ib.*, Vol. V., pts. 2-3, p. 36, Feb. 21st, 1923: Carnarvon, Mid-west Australia.

Zosterops australasiæ australasiæ Mathews, *ib.*, 1923.

DISTRIBUTION. South-west Australia.



H. Gronvold del.

Witherby & Co.

ZOSTEROPS AUSTRALASIAE
(GREEN-BACKED WHITE-EYE)

ZOSTEROPS ALBIVENTRIS
(PALE-BELLIED WHITE-EYE.)

ZOSTEROPS LUTEA
(YELLOW WHITE-EYE)

NATIONAL MUSEUM MELBOURNE

GREEN-BACKED WHITE-EYE.

Adult male. General colour of the upper-surface dull yellowish-green, including the top of the head, nape, sides of face, sides of neck, hind-neck, back, rump, upper tail-coverts, scapulars, inner upper wing-coverts, and outer margins of secondary-quills; marginal upper wing-coverts, bastard-wing, and primary-coverts more or less intermixed with cinnamon-rufous; outer webs of primary-quills minutely edged with pale yellowish-green, the inner-webs cinnamon-rufous margined with white on the basal portion, becoming uniform hair-brown towards the tips; tail hair-brown with yellowish-green margins to the feathers on the outer webs and obsolete cross-bars; lores and a portion of the eye-ring black; chin, throat and under tail-coverts lemon-yellow; breast and sides of breast pale grey becoming whitish on the middle of the abdomen and tinged with cinnamon on the sides of the body; thighs dusky; axillaries, under wing-coverts, and margins of quills below whitish tinged with cinnamon; under-surface of flight-quills dark greyish-brown; lower aspect of tail similar but paler. Bill pale horn, culmen darker, eyes brown, feet pale greyish-horn. Total length 120 mm.; culmen 8, wing 57, tail 46, tarsus 17. Figured. Collected in the Stirling Ranges, South-west Australia, on the 26th of September, 1910.

Adult female similar to the adult male.

Adult female. General colour of the upper-surface olive-green, including the top of the head, sides of face, sides of neck, hind-neck, back, rump, upper tail-coverts, scapulars, upper wing-coverts, and outer aspect of flight-quills; remainder of flight-quills hair-brown fringed with white on the inner margins; tail also hair-brown narrowly fringed with whitish on the inner-webs; eye-ring white edged with black on the frontal portion; chin and throat lemon-yellow; breast and sides of body vinous-grey; abdomen cream-white; under tail-coverts lemon-yellow; axillaries and under wing-coverts white like the inner edges of the quills below, remainder of quill-lining hair-brown; lower aspect of tail similar but rather paler. Eyes dark brown, feet horn, bill horn, with culmen darker. Total length 111 mm.; culmen 8, wing 57, tail 45, tarsus 16. Collected in the Stirling Ranges, South-west Australia, on the 20th of October, 1910.

Breeding birds "have grey flanks and yellow thighs." (Whitlock.)

Eggs. Two to four for a clutch. A clutch of three taken on Dirk Hartog Island, Western Australia, on the 23rd of July, 1920, is of a light bluish-green, and lighter than those of the common *Zosterops lateralis*. Swollen ovals in shape; surface of shell smooth, but almost devoid of gloss. 13-14 mm. by 10.

Nest. A small cup-shaped structure, very closely resembling that built by *Zosterops lateralis*, and placed in a small bush, sometimes within three feet of the ground.

Breeding-months. August to December.

In the *Nouv. Dict. d'Hist. Nat.*, nouv. ed., Vol. XI., p. 235, June 21st, 1817, Vieillot described: "Le Pouillot de l'Australasie, *Sylvia australasice* Vieill., est d'un vert-olive tirant au jaune sur la tête; de cette dernière couleur sur le bord du front, la gorge et le devant du cou; blanc sur les parties postérieures; noirâtre sur les penes des ailes et de la queue, dont les bords sont d'un vert-jaune; le bec brun; les pieds couleur de chair rembrunie. Taille du pouillot *fitis*."

This description, which appears hitherto to have been overlooked, is a good one of the West Australian *Zosterops*, which has long been known as

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Z. gouldi Bonaparte. The specimen described was probably collected at King George Sound by some of the French voyageurs, where this bird is common.

Gould also described it, but as he selected a name previously used in this genus, Bonaparte renamed it after Gould.

Gould's notes read : "Is an inhabitant of the western coast of Australia, where it constitutes a beautiful representative of the *Z. caeruleus* of the southern and eastern coasts. As might be supposed, the habits, manners, actions and economy of two species so nearly allied are very similar ; hence the settlers of Swan River were not long in discovering that in this species they had found no friend to their gardens during the season when the fruits are ripening, whatever good it may effect by the destruction of insects at other periods. Gilbert informed me that : 'This bird is particularly fond of figs and grapes, it consequently abounds in all the gardens where these plants are cultivated, and it is often to be seen as numerous as sparrows in England ; besides feeding upon fruits, I have also observed it taking flies while on the wing after the manner of the true Fly-catchers. Its note is a single plaintive one, several times repeated, and its flight is irregular and of short duration. The breeding-season commences in August, and ends in November ; those nests that came under my observation during the earlier part of the season invariably contained two eggs ; but in October and November I usually found the number to be increased to three, and upon one occasion to four.'"

Mr. Tom Carter has written me : "The Green-backed White-eye is one of the commonest birds through all the south-west of West Australia and was occasionally seen at Point Cloates. They are fairly numerous about Carnarvon, and those, who in recent years, have started fruit gardens on the banks of the Gascoyne River complain about the damage done to the fruit from these birds piercing such a quantity with their sharp little beaks. This is a common complaint all through the south-west, grapes especially suffering from the probing. Countless thousands of birds are shot annually at the orchards. August 16th, 1911. Found a nest containing small young in a low bush near Carnarvon. In the south-west this species is rather a late breeder, eggs being found from the end of September to the end of the year. The nest is very pretty, neatly made, of a deep cup-shape, mostly of fine dry grass, and a little hair or wool as a lining. It is usually built in a bush, about three or four feet above the ground. The clutch is two or three eggs. At Broome Hill, Oct. 7th, 1906, two fresh eggs ; Oct. 18th, 1910, three eggs. At Albany, Jan. 10th, 1910, two small young in nest. At Margaret River, three fresh eggs."

Captain S. A. White wrote me : "This bird is like other members of this

GREEN-BACKED WHITE-EYE.

family in note, food and habits. They are fairly plentiful in the south-western districts and I have found them breeding in the tea-trees near the coast in October and November. The usual clutch of eggs seems to be three, while at times they lay only two eggs. The nest is cup-shaped, composed of dry grass and rootlets; at times cobwebs are used, but this is not general. The position of the nest varies in height from the ground from 4 to 20 feet and is generally placed in the drooping bough of a tea-tree."

The recent excursion of Eastern Ornithologists into West Australia was most productive of good field results, and a note by Ashby I also quote in connection with the *Z. lateralis* puzzle.

Captain S. A. White wrote: "A very plentiful bird, especially along the sea-coast, where it was nesting amongst the tea-tree and low shrubs. Its call is a short, mournful one, like that of the other members of this family of birds. Its bright coloration is very noticeable. Several nests were seen containing eggs."

Alexander noted from Perth: "Resident. Very plentiful, especially near the coast, and found also on Rottnest and Garden Islands and some of the smaller islands further south."

No subspecies of this bird were named until by error Grant described *Zosterops shortridgii*, and I here reproduce Whitlock's remarks: "My researches near the south coast did not result in anything of special interest, but I paid some attention to a newly described species of White-eye (*Zosterops shortridgii*) Grant. The types were procured on Rabbit Island, King George's Sound. The latter island is only a huge mass of granite, whose area is limited to a couple of hundred acres or thereabouts, and only separated from the mainland by a very narrow channel. It was out of the question, therefore, that such conditions, with the absence of isolation, could produce a local species. *Z. shortridgii* is said to differ from *Z. gouldi* in having the middle of the breast, as well as the belly, thighs, and under tail-coverts, pale yellow, the sides and flanks greyer and only slightly washed with cinnamon. In *Z. gouldi* the thighs are always white. I found birds answering to this description both to the north and to the west of Albany, and it may be noted that the cinnamon wash on the flanks in one or two I procured was absent. Again, I shot others with the latter characteristic very pronounced. I can only say at present, with certainty, that the birds with grey flanks and yellow thighs were breeding birds. Possibly the other type may have been breeding too; but I am rather inclined to think the differences are due to age, and are not of specific value."

In 1912 I considered *Z. gouldi* as the geographical representative of the eastern *Z. lateralis* and only allowed it subspecific rank. In 1913 I elevated

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it to specific rank, differentiating between geographical subspecies and geographical species, and selected King George Sound as the type locality, and then synonymised Grant's *Z. shortridgii*. This may be incorrect, and from the data I would conclude that the types came from Perth; in which case *Z. shortridgii* would be available for the Albany birds, if these prove separable from the Swan River form.

I have named

Zosterops gouldi warreni.

"Differs from *Z. g. gouldi* Bonaparte in being darker, especially below. Warren River, South-west Australia."

Warren River district.

Then, as Ashby has recently confirmed my conclusion that the Carnarvon form was separable, writing: "The birds at Geraldton are smaller and brighter in tint than birds observed at Perth." I would admit tentatively four forms:

Zosterops gouldi gouldi Bonaparte.

Perth district, West Australia.

Zosterops gouldi warreni Mathews.

Warren River district, South-west Australia.

This darker form probably continues through the very damp south-west corner district.

Zosterops gouldi shortridgii Grant.

King George's Sound, probably to Stirling
Ranges and inland to Broome Hill, etc.

Nearer the typical form than the Warren River form.

Zosterops gouldi edwini Mathews.

Carnarvon.

While it is possible that the Dirk Hartog Island form may prove separable, although Carter wrote: "The Green-backed White-eye was numerous both on Dirk Hartog and the Peron, and some were seen on Edel Land. A comparison with skins from the south-west showed no differences."

ZOSTEROPS ALBIVENTRIS.

PALE-BELLIED WHITE-EYE.

(PLATE 506.)

ZOSTEROPS ALBIVENTRIS Reichenbach, "Handb. Merop.," i.e., Handb. Spec. Ornith., Abth. II., p. 92 (Icones Synops. Avium Cont., IX., March 1st, 1852), 1852: "Oceanien," based on Hombr. & Jacq., Voy. Pôle Sud, pl. 19, f. 3, i.e.,

Zosterops à ventre blanc Hombron and Jacquinot, Voy. Pôle Sud, plate 19, f. 3, Oct. 1844.

Zosterops albiventris Reichenbach, Handb. Spec. Ornith., Abth II., p. 92, 1852; Pucheran, Voy. Pôle Sud, Zool., Vol. III., p. 95, 1853; Sharpe, Cat. Birds, Vol. IX., p. 164, 1884; Ramsay, Tab. List Austr. Birds, p. 14, 1888; Hall, Key Birds Austr., p. 38, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 351, 1901; North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 213, 1907; Mathews, Handl. Birds Austral., p. 89, 1908; *id.*, List Birds Austr., p. 253, 1913; Macgillivray, Emu, Vol. XIII., p. 175, 1914 (N.Q.); *id.*, *ib.*, Vol. XVII., p. 203, 1918 (N.Q.).

Zosterops flavogularis Masters, Proc. Linn. Soc. N.S.W., Vol. I., p. 56, Feb. 1876: Islands off Cape Grenville, North Queensland; Ramsay, *ib.*, Vol. II., p. 191, 1878; North, *ib.*, Ser. 2, Vol. II., p. 408, 1887; Ramsay, Tab. List Austr. Birds, p. 14, 1888.

Zosterops albiventris albiventris Mathews, Nov. Zool., Vol. XVIII., p. 384, 1912; *id.*, List Birds Austr., p. 253, 1913.

Zosterops albiventris cairncrossi Mathews, Austral Avian Record, Vol. III., pt. 3, p. 62, April 7th, 1916; Cairncross Island, Queensland.

DISTRIBUTION. North Queensland. (Never on the mainland.)

Adult male. General colour of the upper-surface greenish-yellow, including the top of the head, sides of face, sides of neck, hind-neck, back, rump, upper tail-coverts, scapulars, upper wing-coverts, and outer margins of flight-quills; outer edge of bastard-wing dark brown; inner webs of flight-quills hair-brown with pale margins; tail dark brown with pale edgings on the inner webs and fringed with greenish-yellow on the outer ones; eye-ring whitish; lores and feathers in front of the eye black; chin and throat bright lemon-yellow; breast, abdomen, and sides of body cream-white; under tail-coverts pale lemon-yellow; axillaries and under wing-coverts white tinged with yellow; under-surface of flight-quills greyish-brown with white margins; lower aspect of tail similar but paler. Eyes silvery-brown,

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upper mandible and tip of lower black, lower base greyish-black; legs bluish-grey. Figured. Collected on Cairncross Island, North Queensland, on the 20th of July, 1911.

Adult female similar to the adult male.

Adult female. General colour of the upper-surface yellowish-green, including the top of the head, sides of face, sides of neck, hind-neck, back, upper tail-coverts, scapulars, upper wing-coverts and outer aspect of the flight-quills; inner webs of the last hair-brown with white margins; tail pale hair-brown fringed with yellowish-green on the outer webs; base of fore-head orange-yellow; lores blackish; eye-ring white; chin, throat, and fore-neck pale yellow; breast, sides of breast, and sides of body pale grey; abdomen and thighs white; under tail-coverts pale yellow; axillaries, under wing-coverts, and inner margins of quills below white, remainder of quill-lining dark hair-brown; lower aspect of tail similar but somewhat paler. Eyes silvery-brown, upper mandible and tip of lower black, lower base greyish-black; legs bluish-grey. Total length 120 mm.; culmen 10, wing 58, tail 41, tarsus 18. Collected at Cairncross Island, North Queensland, and is the type of *Z. a. cairncrossi*.

Eggs. Two to four for a clutch. A clutch of four eggs taken at Cape York, North Queensland, on the 22nd of December, 1909, is of a pale bluish-green. Rounded ovals in shape, surface of shell smooth, and almost quite free of gloss. 16-17 mm. by 13.

Nest. Very similar in structure to that of *Zosterops lateralis*.

Breeding-months. September to January.

THIS very distinct species was first figured in the *Atlas of the Voyage Pôle Sud* and upon the figure Reichenbach based his *Zosterops albiventris*, Pucheran publishing the official account of the Voyage the following year. Twenty years afterward Masters described as a new species *Zosterops flavogularis*, and though he recorded half a dozen islands he gave no field-notes.

The only other ornithologist to meet with this bird appears to be Macgillivray, who has written: "A pair of these birds was secured on Cairncross Island. They were numerous there, and also on Wednesday Island, York Island, Darnley, and other of the Torres Strait Islands. When at anchor off York Island the singing of these birds seemed to come from some hundred of throats. Stomach contents, fruit juices and insects." He later added: "The type of the Pale-bellied White-eye came from Warrior Island in Torres Strait. We first noted it, and obtained two specimens on the Forbes Group. Both were females, and the stomach contents were insects and berries. There were many of these birds on Haggerstone Island, where they were busily engaged feeding amongst the branches of several flowering trees. Two nests were found, one just started, the other ready for occupation. This species is never found on the mainland, preferring the scrubs on islands off the coast."

PALE-BELLIED WHITE-EYE.

I recently named

Zosterops albiventris cairncrossi.

"Differs from *Z. a. albiventris* Reichenbach in being whiter below, the under tail-coverts much yellower and the back a uniform green. Cairncross Island, Queensland."

I overlooked the fact that this would be typical *flavogularis* Masters, as I had selected Cape Grenville of the type locality of Masters' form myself.

At present I am inclined to refer all the specimens to one form, typical *Z. albiventris* Reichenbach.

ZOSTEROPS LUTEA.

YELLOW WHITE-EYE.

(PLATE 506.)

ZOSTEROPS LUTEUS Gould, Birds Austr., pt. XI., Vol. IV., pl. 83, June 1st, 1843: Greenhill Island, Van Diemen's Gulf, Northern Territory.

*Zosterops luteus** Gould, Birds Austr., pt. XI. (Vol. IV., pl. 83), June 1st, 1843; *id.*, Handb. Birds Austr., Vol. I., p. 590, 1865; Ramsay, Proc. Linn. Soc., N.S.W., Vol. II., p. 191, 1878; Sharpe, Cat. Birds Brit. Mus., Vol. IX., p. 183, 1884; Ramsay, Tab. List Austr. Birds, p. 14, 1888; Hall, Key Birds Austr., p. 38, 1899; Campbell, Nest and Eggs Austr. Birds, Vol. I., p. 351, 1901; Hall, Vict. Nat., Vol. XVIII., p. 31, 1901; *id.*, Emu, Vol. II., p. 49, 1902 (N.W.A.); Carter, *id.*, Vol. III., p. 91, 1903 (N.W.A.); Mathews, Handl. Birds Austral., p. 89, 1908; Whitlock, Emu, Vol. VIII., p. 183, 1909 (W.A.); Crossman, *ib.*, Vol. IX., p. 150, 1910 (W.A.); G. F. Hill, *ib.*, Vol. X., p. 282, 1911 (N.W.A.); *id.*, *ib.*, Vol. XII., p. 262, 1913 (N.T.); H. L. White, *ib.*, Vol. XVI., p. 226, 1917 (N.T.); Campbell, *ib.*, Vol. XVIII., p. 185, 1919 (N.T.); *id.*, *ib.*, Vol. XXI., p. 193, 1922 (N.T.).

Zosterops (Tephras?) gulliveri Castelnau and Ramsay, Proc. Linn. Soc., N.S.W., Vol. I., p. 383, March, 1877: Norman River, Gulf Country, Queensland; Ramsay, *ib.*, Vol. II., p. 191, 1878; Sharpe, Cat. Birds Brit. Mus., Vol. IX., p. 188, 1884; Ramsay, Tab. List Austr. Birds, p. 14, 1888; Hall, Key Birds Austr., p. 38, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 352, 1901; Le Souëf, Emu, Vol. II., p. 146, 1903 (N.T. !); Mathews, Handl. Birds Austral., p. 90, 1908; Macgillivray, Emu, Vol. XIII., p. 175, 1914 (N.Q.).

Zosterops balstoni Grant, Ibis, 1909, p. 663, Oct. No. (Recd. B.M. Nov. 27th): Carnarvon, Mid-west Australia; Whitlock, Emu, Vol. XVII., p. 178, 1918 (W.A.); Campbell, *ib.*, Vol. XVIII., p. 7, 1918 (W.A.); *id.*, *ib.*, p. 263, 1919 (W.A.).

Zosterops lutea lutea Mathews, Nov. Zool., Vol. XVIII., p. 384, 1912; *id.*, List Birds Austr., p. 254, 1913.

Zosterops lutea gulliveri Mathews, Nov. Zool., Vol. XVIII., p. 384, 1912; *id.*, List Birds Austr., p. 254, 1913.

Zosterops lutea tribulationis Mathews, Nov. Zool., Vol. XVIII., p. 384, Jan. 31st, 1912: Point Torment, North-west Australia; *id.*, List Birds Austr., p. 254, 1913.

* Also spelt *lutea*.

YELLOW WHITE-EYE.

Zosterops lutea balstoni Mathews, Nov. Zool., Vol. XVIII., p. 384, 1912; *id.*, List Birds Austr., p. 254, 1913; Montagu, Proc. Zool. Soc. (Lond.), 1914, p. 635.

Zosterops lutea hecla Mathews, Austral Avian Record, Vol. I., pt. 2, p. 48, April 2nd, 1912: Hecla Island, Parry Harbour, North-west Australia; *id.*, List Birds Austr., p. 254, 1913.

Zosterops lutea headlandi Mathews, Austral Avian Record, Vol. V., pts. 2-3, p. 36, Feb. 21st, 1923: Point Headland, Mid-west Australia.

DISTRIBUTION. Tropical Australia from Carnarvon, Mid-west Australia, through North-west Australia and Northern Territory to Normanton, Gulf of Carpentaria, Queensland.

Adult male. General colour of the upper-surface olive-yellow, including the top of the head, sides of face, nape, sides of neck, hind-neck, back, rump, scapulars, upper wing-coverts, and outer aspect of flight-quills; bastard-wing and outer web of first primary dark hair-brown like the inner webs of the flight-quills, which are margined with white; upper tail-coverts somewhat paler than the back; tail also hair-brown slightly edged with yellowish-green on the outer webs and whitish on the inner ones; lores and base of fore-head tinged with orange-yellow; eye-ring white, except on the front portion where the feathers are black with hair-like tips; chin, throat, breast, abdomen, thighs, and under tail-coverts bright yellow—inclining to orange-yellow on the flanks; under wing-coverts white, more or less tinged with yellow; under-surface of flight-quills hair-brown with pale margins; lower aspect of tail also hair-brown but paler. Eyes light brown, upper mandible and tip of lower black, lower base blue-slate. Total length 120 mm.; culmen 9, wing 58, tail 41, tarsus 18. Figured. Collected on Hecla Island, North-west Australia, on the 14th of November, 1909, and is the type of *Zosterops lutea hecla*.

Adult female. Differs in having the back greenish and the under-surface not so yellowish.

Adult. General colour of the upper-surface olive-green, including the top of the head, sides of face, sides of neck, hind-neck, back, rump, upper tail-coverts, scapulars, upper wing-coverts, and outer aspect of the flight-quills, the inner webs of the last blackish with white margins; outer margins of bastard-wing inclining to black; tail dark brown with pale edgings on the inner webs and olive-green on the outer ones; lores and feathers in front of the eye black; eye-ring white; base of fore-head inclining to yellow; chin, throat, breast, abdomen, sides of body, and under tail-coverts sulphur-yellow; axillaries and under wing-coverts white, slightly tinged with sulphur-yellow; under-surface of flight-quills blackish-brown margined with white; lower aspect of tail dark brown. Total length 108 mm.; culmen 9, wing 56, tail 40, tarsus 19. Figured. Collected at Point Headland, Northern Mid-west Australia, in October 1907, and is the type of *Zosterops lutea headlandi*. (Bottom figure.)

Adult male. General colour of the upper-surface dull greenish-yellow, including the top of the head, sides of face, sides of neck, hind-neck, back, scapulars, upper wing-coverts, and outer margins of flight-quills; inner webs of flight-quills dark hair-brown margined with dull white; upper tail-coverts somewhat paler than the back; tail-feathers pale hair-brown, more or less tinged with yellow, and have dark obsolete cross-bars; lores and a portion of the eye-ring blackish; base of fore-head paler than the top of the head; chin, throat, breast, abdomen, sides of body, thighs, and under tail-coverts yellow; axillaries, under wing-coverts, inner margins of flight-quill below white, remainder of the quill-lining hair-brown; lower aspect of tail similar. Eyes brown, feet and legs leaden-blue, bill blackish-brown, lower base pale leaden-

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blue. Total length 100 mm.; culmen 8, wing 57, tail 38, tarsus 18. Collected at Point Torment, North-west Australia, on the 14th of January, 1911, and is the type of *Z. l. tribulationis*.

Adult male. General colour of the upper-surface greenish-yellow, including the top of the head, sides of face, hind-neck, sides of neck, back, upper tail-coverts, scapulars, and wings; inner webs of flight-quills blackish-brown with whitish margins; tail pale hair-brown with a slight tinge of greenish-yellow and dark obsolete cross-bars; eye-ring whitish; lores rather paler than the crown; rectal-bristles blackish but only sparsely developed; entire under-surface bright yellow including the throat, breast, abdomen, and under tail-coverts, being slightly darker; under wing-coverts and margins of flight-quills below cream-white; remainder of flight-quills and lower aspect of tail pale hair-brown. Eyes chestnut; feet and bill lead-grey. Total length 117 mm.; culmen 10, wing 58, tail 41, tarsus 18. Collected at Normanton, Gulf of Carpentaria, North Queensland, on the 22nd of April, 1914.

Immature female. General colour of the upper-surface dull yellowish-olive, including the crown of the head, sides of face, sides of neck, hind-neck, back, scapulars, upper wing-coverts, and outer margins of flight-quills; inner webs of the last dark hair-brown with white margins; tail pale hair-brown, the feathers narrowly margined with yellow; lores and fore-part of eye-ring blackish; base of fore-head, chin, throat, breast, abdomen, sides of body, thighs and under tail-coverts pale yellow; under wing-coverts and inner margins of quills below cream-white; under-surface of flight-quills hair-brown; lower aspect of tail similar but paler. Eyes brown, bill and feet grey. Collected at Normanton, Gulf of Carpentaria, North Queensland, on the 11th of January, 1914.

Eggs. A clutch of three eggs taken at Derby, North-west Australia, on the 17th of November, 1902, is of a very pale bluish-green. 16-17 mm. by 12-13.

Nest. Usual cup-shaped construction.

Breeding-months. Probably September to January.

GOULD introduced this new species into his folio *Birds of Australia* without preliminary description, writing: " ' I first met with it,' says Gilbert, ' in August, on Greenhill Island, Van Diemen's Gulf, dwelling among the mangroves or the densest thickets. It is much more wild and solitary than *Zosterops cærulescens*, and does not resort like that bird to the gardens and the neighbourhood of the houses of the settlers, its note is also very different, being a pretty canary-like song. When disturbed it usually left the thicket for the higher branches of the gum trees, where it was effectually hidden from view by the thick foliage. It was generally met with in small families of from three to seven or eight in number.' "

Mr. J. P. Rogers wrote me: " This is another mangrove bird, but at times it leaves the mangroves and goes out into the dry country, but I have never seen it more than half a mile from the salt bush. It is fairly common at Derby, and has been breeding lately (Feb. 1911) as I have seen several nests.

" Cooper's Camp, Nov. 20th, 1911. A few of these birds are seen

YELLOW WHITE-EYE.

occasionally in the mangroves but are not nearly so numerous as at Point Torment, King Sound, West Kimberley. On the 6th Mr. Lec, one of the owners of the saw mill here, brought me a nest of this bird containing one egg; he said there were two, but he broke one and it was strongly incubated; the nest was built in a mangrove overhanging a tidal creek. None of these birds were seen on the north side of the island, but there I was not among the mangroves. Here these birds stick very closely to the mangroves as at King Sound."

Mr. Tom Carter has written me: "The Carnarvon White-eye is given in your 1912 "Reference List" as occurring through West Australia generally. As far as I know, its range, as at present determined, is from Carnarvon to the North-west Cape. Small flocks of these birds were often seen about Point Cloates and along the coast to the North-west Cape, in the winter months. In the mangroves about Carnarvon and near the North-west Cape they are common throughout the year. (There are no mangroves within 35 miles of Point Cloates, the nearest being a small patch at mouth of Yardie Creek.) I was never successful in finding a nest, but in February 1900 a male bird was shot in mangroves, near North-west Cape, that was evidently breeding, and on Sept. 17th, 1911, some were shot in mangroves at Carnarvon that were also breeding. They breed in the mangroves in small parties of six or ten, and move along rather rapidly, as they feed on insects in the dense foliage, uttering a chorus of low 'tinkling' notes all the time. Occasionally they may be seen in coastal scrub, but were never observed by me more than about a quarter of a mile from the beach. I have a note in my Point Cloates' journal that unusually numerous and large flocks were observed there about June 7th, 1897."

Montague has written: "Specimens (from Monte Bello Islands) agree with the type of *Zosterops balstoni* from Carnarvon, North- (i.e., Mid-) west Australia. The species is a small, dull-coloured form of *Zosterops lutea* Gould, though it would be more correct to look upon the type *lutea* as an island form of the far more widely distributed *balstoni*. It is much the most numerous bird inhabiting the Monte Bello Group, living upon all the islands, however small, where there is sufficient scrub to afford food and protection. It appears to be omnivorous in diet, feeding upon berries and seeds, and searching for insects amongst the foliage of the mangroves, in the vicinity of which it is always to be seen. The nesting season is probably in October. In August the males were in full song, and at the end of that month a half-constructed nest was discovered, suspended amongst the foliage of a dense *Bruguiera*, but it was not completed when I left."

Whitlock's notes read: "On arrival at Port Hedland last May (1908) I soon detected the notes of a *Zosterops* in the mangroves which I knew were

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not those of *Z. gouldi*, our familiar 'Greenie' of the south-west. But it was not until after arriving at Condon in the following October that I was able finally to identify the songster. When searching for nests of *Pachycephala lanioides* in the sweltering mangrove thickets I often had the little *Zosterops* within a few feet of my head. It is by no means a timid species, and will pour forth a marvellous volume of song, heedless of the presence of an intruder. Its plumage harmonizes wonderfully with the green leaves and the patches of sunlight on the foliage of the mangroves. At a short distance, unless in motion, it is practically invisible, or only to be detected by the sharpest eye catching a glimpse of the white ring round the eyelid. I think I was between broods, for the only nest I could find, in spite of persistent efforts, was a much-battered one, from which the young had flown. I could see no difference in its structure from that of *Z. gouldi*. I had the greatest difficulty in obtaining two specimens of the parents themselves. I was lucky enough at last in observing a pair where the mangroves were low and open, and after some trouble got them both."

G. F. Hill recorded: "Were seen in the mangroves from Derby northwards, but they were uncommon in all localities excepting on Hecla Island and the shores of Parry Harbour. The nesting season appears to be from the beginning of February to April."

McLennan's notes, recorded by H. L. White, read: "Morrington Island, Bickerton Island and Glyde River. Noted in the mangroves. King River. Often seen in mangroves along river. Liverpool River Island. Noted in the scrub. Roper River. Noted in the mangroves."

Under the name *Zosterops gulliveri* Macgillivray has written: "Numerous in the mangroves along the Norman River. One pair was obtained on the Leichhardt River, and another pair near Normanton. Differs but little from *Z. lutea*."

I used McIlville Island specimens as typical and note that the male and female seem to differ very appreciably in coloration, only the adult male being 'lutea,' the female (and immature) being of the 'gulliveri' and 'balstoni' style, and island forms being more brilliant.

The scientific history of this interesting form is comparatively brief and uneventful. Gould described the species from an island, and thirty years later Castelnau and Ramsay named: "*Zosterops (Tephras?) gulliveri*. The general colour above is of a light ashy-brown, darker on the quills of the wings and tail, all the feathers washed with pale olive-yellow, which shows more conspicuously on the outer webs of the wing and tail-feathers; the fore-head and throat of a little brighter yellow; lores blackish, the whole of the under-surface and the under wing and tail-coverts very pale citron, with

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a slight wash of buff on the flanks; legs light lead-grey; bill dark lead-grey above, lower mandible paler. Total length, 4.2; wings, 2.25; tail, 1.8; tarsus, 0.7; bill from fore-head, 0.55; from nostril, 0.3; from gape, 0.6. Norman River, Queensland. This species seems to belong more to the sub-genus *Tephros* than to *Zosterops* proper, in its more rounded wings and tail and want of the eye-ring; the bill, however, is like that of a true *Zosterops*."

The description is of an immature or female bird, the adult male being a beautiful "*lutea*" with a distinct eye-ring.

Another thirty years passed and then Grant described: "*Zosterops balstoni*. Adult male and female. Similar to *Z. lutea* Gould, but with the upper parts decidedly more greyish-olive, and the under parts, especially the middle of the breast and belly, less brilliant yellow. Carnarvon, Mid-west Australia."

I accepted these two as subspecies of *lutea* and added a fourth in my "Reference List" as

Zosterops lutea tribulationis.

"Differs from *Z. l. lutea* in its much paler coloration both above and below, being paler than *Z. l. balstoni*. Point Torment, North-west Australia."

I later added

Zosterops lutea hecla.

"Differs from *Z. l. lutea* in its larger size, more golden-yellow underneath, and more yellowish-green above. Hecla Island, Parry Harbour, North-west Australia."

These five were admitted in my 1913 "List," but I have added *Zosterops lutea headlandi*, and no emendations have since been made so that we now have:

Zosterops lutea lutea Gould.

Northern Territory.

Note.—Type from an island in Van Diemen's Gulf.

Zosterops lutea hecla Mathews.

Hecla Island, Parry Harbour, North-west
Australia.

Zosterops lutea tribulationis Mathews.

North-west Australia (Mainland).

Zosterops lutea headlandi Mathews.

Mid-west Australia (North).

Zosterops lutea balstoni Grant.

Mid-west Australia (South).

Zosterops lutea gulliveri Castelnau and Ramsay.

Gulf Country, Queensland.

The ranges of this form are not yet defined.

Campbell, recording a male and female from King Island, Northern

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Territory, wrote: "A perfect pair, and similar to *hecla*, and probably also to *tribulationis*, both Mathews subspecies for North-west Australia. Wings alike (55 m.)." Examining one female from Groote Eylandt he has added: "Same as N.T. birds. My former note may be considered somewhat ambiguous. The thought I intended to convey was that *hecla*, from Kimberley District, and probably *tribulationis*, because from the same district as *hecla*, were both synonymous with Gould's *lutea*." He does not mention any distinction in the sexes.

FAMILY—DICÆIDÆ.

GENUS—MICROCHELIDON.

MICROCHELIDON Reichenbach, Handb. Spec.

Ornith., Abth. II. (Handb. Scansores),
p. 243; (Icones Synops. Avium Cont.
XI., Nov. 1st, 1853, p. 220), 1854. Type
(by subsequent designation) Gray, Cat. Gen.

Subgen. Birds, p. 138, 1855 (*Sylvia*), i.e. .. *Motacilla hirundinacea*

Shaw and Nodder.

Myzanthæ Blyth, Journ. As. Soc. Bengal, Vol.

XII., p. 983 (after Nov.), 1843 (ex Hodgson
MS.). (1844 ?). Type (by original designation)

.. .. . *Motacilla hirundinacea*

Shaw and Nodder.

Not—

Myzantha Vigors and Horsfield, Trans. Linn. Soc., Vol. XV., p. 318, 1827.

Austrodicæum Mathews, Austral Avian Record,

Vol. II., Nos. 2-3, p. 60, Oct. 23rd, 1913.

Type (by original designation) *Motacilla hirundinacea*

Shaw and Nodder.

WHEN I separated *Austrodicæum* I wrote: "Differs from *Dicæum* Cuvier in its much shorter, stouter bill, much longer wing, much stronger legs and feet and proportionately shorter tail."

The proposal was apparently due to a confusion of *Hemichelidon* and *Myzanthæ*, these being proposed by Hodgson, the latter for the Indian Flowerpeckers like the present, and *Microchelidon* was ruled out as being preoccupied by Hodgson which I do not find it to be.

The Flowerpeckers constitute a small isolated group of birds inhabiting India to China and thence through all the islands to Australia, but not Tasmania. They have been commonly allowed family rank, but the Pardalotes have been associated with them by some workers, though the latter have no real connection at all. The family *Dicæidæ*, here used, includes only the Flowerpeckers. There are a few genera, Sharpe giving figures of

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the bills in the Catalogue of Birds in the British Museum nearly forty years ago to show the differences.

They are very small birds with broad, sharp pointed bills, long wings, short square tail and medium stout legs and feet.

The bill is short and broadly conical, anteriorly compressed and basally expanded, the culmen semi-keeled and regularly arched, tip sharply pointed but no posterior notch; basally the sides of the upper mandible expand and overlap the edges of the lower mandible; the nostrils appear as linear slits in the basal groove at the base, a thick semi-horny operculum being present on to which the frontal feathering projects half way; there are no nasal bristles and rictal bristles very weak; the lower mandible fairly stout, the interramal space short and feathered.

The wing is long with the first primary minute, hidden by the coverts so that it is commonly asserted to be absent, and the real second is always spoken of as the first; this is longest, but the next two are very little shorter; the secondaries are comparatively short. The tail is short and square.

The tarsus is scutellated in front, sometimes clearly, other times obscurely so as to appear booted, while the hind portion of the tarsus is bilaminate, but here the distinction of the lamina is sometimes obscurely seen.

The toes are short, the hind-toe longest, the middle toe a little shorter, the outer and inner toes subequal and longer with their claws than the middle toe alone; claws sharp, the hind-claw longer and stouter.

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AUSTRODICAUM HIRUNDINACEUM.
(MISTLETOE-BIRD OR FLOWERPECKER).

PARDALOTUS PUNCTATUS.
(SPOTTED PARDALOTE OR DIAMOND-BIRD).

MICROCHELIDON HIRUNDINACEA.

FLOWERPECKER, OR MISTLETOE-BIRD.

(PLATE 507.)*

MOTACILLA HIRUNDINACEA Shaw and Nodder, Naturalists' Miscellany, Vol. IV., pl. 114, Aug. 1st, 1792 : New South Wales.

Motacilla hirundinacea Shaw and Nodder, Naturalists' Miscellany, Vol. IV., pl. 114, 1792.

Swallow Warbler Latham, Gen. Synops. Birds, Suppl. II., p. 250, 1801.

Crimson-breasted Warbler Latham, *id.*, *ib.*

Sylvia rubicollis Latham, Index Ornith. Suppl., p. lv., 1801 (after May).

Sylvia hirundinacea Latham, *id.*, *ib.*

Pipra gularis Lewin, Birds New Holland, pl. vii., p. 11, 1808 : New South Wales.

[Not *Pipra gularis* Latham, Index Ornith. Suppl., p. lvii., 1801.]

Pipra desmarestii† Leach, Zool. Miscellany, Vol. I., p. 94, pl. 41, 1814 : New South Wales.

Malurus hirundinaceus Vieillot, Nouv. Dict. d'Hist. Nat., nouv. ed., Vol. XX., p. 214, 1818.

Crimson-throat Flycatcher Lewin, Birds New South Wales, p. 7, pl. vii., 1822.

Dicæum atrogaster Lesson, Traite d'Ornith., livr. 4, p. 303, Sept. 25th, 1830 : New South Wales.

Dicæum perdalodus Lafresnaye, Mag. de Zool., 1833, pl. 14 : New South Wales.

Dicæum hirundinaceum Gould, Birds Austr., pt. v. (Vol. II., pl. 34), Dec. 1st, 1841 ; *id.*, Handb. Birds Austr., Vol. I., p. 581, 1865 ; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 191, 1878 ; Sharpe, Cat. Birds Brit. Mus., Vol. X., p. 19, 1885 ; Ramsay, Proc. Linn. Soc. N.S.W., Ser. 2, Vol. I., p. 1,093, 1886 : 1887 ; *id.*, Tab. List Austr. Birds, p. 14, 1888 ; Hall, Key Birds Austr., p. 46, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 437, 1901 ; Hall, Emu, Vol. II., p. 52, 1902 (N.W.A.) ; Carter, *ib.*, Vol. III., p. 93, 1903 (M.W.A.) ; Milligan, *ib.*, Vol. IV., pp. 8-10, 1904 (S.W.A.) ; Berney, *ib.*, Vol. V., p. 76, 1905 (N.Q.) ; Batey, *ib.*, Vol. VII., p. 10, 1907 (Vic.) ; Hill, *ib.*, p. 20 (Vic.) ; North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 214, 1907 ; Mathews, Handl. Birds Austral., p. 90, 1908 ; Whitlock, Emu, Vol. VIII., p. 185, 1909 (W.A.) ; Mathews, *ib.*, Vol. IX., pp. 62-69 (N.W.A., N.T.) ; Broadbent, *ib.*, Vol. X., p. 239, 1910 (N.Q.) ; G. F. Hill, *ib.*, p. 283, 1911 (N.W.A.) ; Barnard, *ib.*, Vol. XI., p. 28, 1911 (N.Q.) ; Chandler, *ib.*, Vol. XII., p. 130, 1912 ; Hill, *ib.*, p. 259, 1913 (Central Australia) ; S. A. White, *ib.*, Vol. XIII.,

* The Plate is lettered *Austrodicæum hirundinaceum*.

† Also spelt *desmarestii*.

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p. 31, 1913 (S.A.); Agnew, *ib.*, p. 96 (Q.); Macgillivray, *ib.*, p. 175, 1914 (N.Q.); Barnard, *ib.*, Vol. XIV., p. 48, 1914 (N.T.); Barrett, *ib.*, Vol. XIV., p. 175, pl. xvi., 1915 (Vic.); Lawrence and Littlejohns, *ib.*, Vol. XV., p. 166, pl. xxv., 1916; H. L. White, *ib.*, Vol. XVI., p. 226, 1917 (N.T.); Campbell and Barnard, *ib.*, Vol. XVII., p. 30, 1917 (N.Q.); Macgillivray, *ib.*, p. 203, 1908 (N.Q.); Kersey, *ib.*, Vol. XIX., p. 52, 1919 (Q.); Le Souëf and Macpherson, *ib.*, Vol. XX., p. 90, 1920 (N.S.W.); Alexander, *ib.*, p. 167, 1921 (W.A.); Whitlock, *ib.*, p. 186 (W.A.).

Dicæum hirundinaceum hirundinaceum Mathews, Nov. Zool., Vol. XVIII., p. 386, Jan. 31st, 1912; Belcher, Birds Geelong, p. 318, 1914.

Dicæum hirundinaceum yorki Mathews, Nov. Zool., Vol. XVIII., p. 387: Cape York, Queensland; *id.*, Austral Av. Rec., Vol. I., p. 61, 1912.

Dicæum hirundinaceum tormenti Mathews, Nov. Zool., Vol. XVIII., p. 387: Point Torment, North-west Australia.

Austrodicæum hirundinaceum hirundinaceum Mathews, List Birds Austr., p. 254, 1913; S. A. White, Emu, Vol. XIV., p. 190, 1915 (Central Australia); Carter, Ibis, 1917, p. 608.

Austrodicæum hirundinaceum tormenti Mathews, List Birds Austr., p. 255, 1913.

DISTRIBUTION. Throughout Australia even to Cape York, but not Tasmania.

Adult male. General colour of the upper-surface glossy steel-blue including the top of the head, sides of face, hind-neck, sides of neck, back, wings and tail; inner-webs of flight-quills blackish-brown; chin, throat and upper breast scarlet-red like the short under tail-coverts, the long ones pink; middle of abdomen blackish, skirted on each side with whitish; sides of body, flanks, and axillaries dusky-grey; thighs dusky; under-edge of wing blackish; under wing-coverts white; under-surface of flight-quills hair-brown; lower aspect of tail similar to its upper-surface. Eyes brown, bill leaden-black, feet and tarsi blackish-brown. Total length 103 mm.; culmen 8, wing 64, tail 31, tarsus 12. Figured. Collected at Point Torment, King's Sound, West Kimberley, North-west Australia, on the 3rd of April, 1911, and is the type of *D. h. Tormenti*.

Adult female. General colour of the upper-surface dusky-brown with glossy steel-blue on many of the feathers on the back and wings; inner-webs of flight-quills blackish-brown with pale margins; upper tail-coverts and tail glossy steel-blue; sides of face dusky-brown becoming greyish-white on the cheeks; a dark moustachial streak on each side of the throat; chin, throat, and upper breast white with an indication of grey spots on the last; sides of neck, sides of breast, and middle of abdomen dusky-brown; flanks and thighs cream-white; axillaries and under wing-coverts white; under-surface of flight-quills hair-brown margined with white; under tail-coverts reddish-pink becoming much paler on the long ones; lower aspect of tail blackish-brown. Eyes brown, feet and tarsi leaden-black. Bill leaden-blue, lower mandible greyish. Total length 88 mm.; culmen 8, wing 60, tail 25, tarsus 13. Figured. Collected at Point Torment, King's Sound, West Kimberley, North-west Australia, on the 14th of February, 1911.

Eggs. Three eggs usually form the clutch. A clutch of three taken at Manly, New South Wales, on the 24th of November, 1893, is of a pure white. Long ovals in shape; surface of shell very smooth, and almost devoid of gloss. 17-18 mm. by 11.

A set of three eggs taken at Borrooloola, Macarthur River, Northern Territory, on the 11th of January, 1914, measures as follows: 15-16 mm. by 10-11.

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Nest is rather a neat pear-shaped structure, with a slit-like entrance on the side; is composed almost entirely of cobwebs, spiders' cocoons intermingled and matted together with brownish downy seeds, and, on the outside, the stained sawdust-like excreta of various wood-boring insects. The nest is firmly constructed, and has quite a remarkable "felt" or "elastic-like" feeling to the touch, and is a wonderful production for a bird. It is usually suspended from a twig of a bushy tree, and the height varying from 4 to about 25 feet up from the ground. Measurements are: Length over all 3 to $3\frac{1}{4}$ inches, breadth over all $1\frac{3}{4}$ to $2\frac{1}{4}$ inches, and the entrance is about $1\frac{1}{4}$ inches long by $\frac{1}{2}$ to sometimes nearly $\frac{3}{4}$ of an inch across.

Breeding-months. September to end December or January.

THIS was one of the earliest Australian birds to be described, as it was figured by Shaw and Nodder in their *Naturalists' Miscellany*, and also by Lewin.

Nevertheless Gould's notes are the first of any importance, as follows: "By far the greater number of the Australians are, I believe, unacquainted with this beautiful little bird, yet there is scarcely an estate in either of the colonies in which it may not be found either as a permanent resident or an occasional visitor. Its natural disposition, leading it to confine itself almost exclusively to the topmost branches of the loftiest trees, is doubtless the cause of its not being more generally known than it is, its rich-scarlet breast not even attracting notice at the distance from the ground at which it generally keeps, and, in obtaining specimens, I was more frequently made aware of its presence by its pretty warbling song than by its movements among the branches; so small an object, in fact, is most difficult of detection among the thick foliage of the lofty *Casuarinae*, to which trees it is extremely partial, particularly to those growing on the banks of creeks and rivers. It is also frequently to be seen among the clusters of the beautiful parasitic *Loranthus*, which is very common on the *Casuarinae* in the neighbourhood of the Upper Hunter. Whether the bird is attracted to this mistletoe-like plant for the purpose of feeding upon its sweet and juicy berries I could not ascertain; its chief food is insects, but in all probability it may occasionally vary its food. The Swallow *Dicaeum* has neither the actions of the *Pardalotes* nor of the Honey-eaters; it differs from the former in its quick darting flight, and from the latter in its less prying, elinging, and creeping actions among the leaves, etc. When perched on a branch it sits more upright, and is more Swallow-like in its contour than either of the forms alluded to; the structure of its nest and the mode of its nidification are also very dissimilar. Its song is a very animated and long continued strain, but is uttered so inwardly that it is almost necessary to stand beneath the tree upon which the bird is perched before its notes can be heard. It would appear that the range of this species extends to all parts of the Australian continent, since I have received specimens from

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every locality yet explored. I found it breeding on the lower Namoi, which proves that the interior of the country is inhabited by it as well as those portions between the ranges and the coast. Mr. White, of the Reedbeds near Adelaide, says: 'This little bird is sometimes rather numerous here. It appears to be wholly frugivorous, for all of those I have dissected had fruit in them; it has no regular stomach, nor even an enlargement of the intestine, which averages above five inches and a half in length, and through which the food passes whole. It arrives in Adelaide about February, and stays but a short time. I have met with it very far north.' "

Mr. L. G. Chandler has written me: "I watched a female building its beautiful purse-like nest. While collecting cobwebs the bird presented a curious appearance. It obtained the web off a dead tree and threw itself half backward while detaching it from a limb, at the same time stretching its neck in a peculiar manner. All the time it flew to and from its nest it uttered short single notes and I was able to trace it by this agency to the Eucalyptus sapling in which it was building. The nest was about twenty-five feet from the ground and fastened to a single twig at the extremity of the limb. The female alone was engaged in the work of construction and had apparently just commenced operations. The male was not noticed at any time in the vicinity. The bird worked rapidly, only staying at the nest from five to nine seconds, and returning within a minute to two minutes. Within three weeks I again visited the locality to secure the nest and eggs. Although I knew the limb the nest was built on, it was some time before I could see the nest itself, it looked like the work of a spider. This bird is fairly plentiful in the Olinda and Frankston districts, especially during the autumn months."

Mr. F. E. Howe has written also: "I was attracted by the actions of a female and after watching her a while found the nest just started. The female alone was doing the work, but we observed that each visit she made the male accompanied her but kept high up in the dead timber where his beautiful plumage was most conspicuous and he gave voice to most beautiful notes."

Mr. Tom Tregallas complains: "Of all the bush birds the Mistletoe-Bird is perhaps the most harmful. The damage caused to our forests through the agency of this little harmless-looking bird is enormous. In many parts whole areas of forest have succumbed to the malign influence of the parasitic mistletoe, and the Government have been considering means for its destruction. How hard it will be to suppress the nuisance, let alone its extinction, may be gathered from the fact that many of the mistletoe infested trees are of the largest in the forests, and many indeed are almost unclimbable. Moreover, if the mistletoe were all cleared off the trees in one

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particular section, it would rapidly accumulate again as long as the birds which carry and spread the seed were allowed to exist. How easy it is for the seed of the mistletoe to germinate may be found out by actual experiment, as I proved. Procuring a few of the ripe seeds from shot specimens of the Mistletoe-Bird, I placed them in different positions on the limbs of plum trees in my garden, and waited results. The glutinous nature of the seed-covering makes it adhere to anything it touches, hence there was no difficulty in fastening the seed to the tree. In a few days the pulpy covering spread itself out and along the limb, fine hairs that eventually formed into rootlets protruded from the seed and searched for a hold on the bark and in less than a month nearly every seed had firmly established itself on the tree. I then destroyed the plants, as the experiment had gone far enough to prove how easy it is to spread this pest. There are about four varieties of mistletoe in Victoria and during the time they are in bloom the Flowerpecker (another name for the Mistletoe-Bird) feeds on the nectar contained in the trumpet-shaped flowers, and at this time does no harm. As soon as the seeds ripen he eats them, and if shot at this time the stomach will be found to contain very little else but the seeds. He is a very lively bird, and most erratic in his choice of feeding trees. He will feed for a few moments in a bunch of mistletoe, as if in a desperate hurry, then without a moment's warning he will suddenly leave the tree, and fly off frequently half a mile before he settles again, and repeats his tactics. During the day, feeding in this manner, he must cover a large extent of country, dropping the seeds as he goes, and causing the destruction of many a noble tree. In the Frankston and Olinda districts whole trees are covered with the mistletoe, some examples of which hang down for a distance of 9 or 10 feet. As soon as the mistletoe plant is firmly established, the whole strength of the limb flies into it, and all the rest of the branch above the parasite withers away and dies. Some of the flowering bunches of mistletoe are extremely beautiful, and it is a pity they do so much harm."

To contrast with this account I cite G. F. Hill's notes in connection with the Birds of the Ararat District, Victoria: "It would be interesting to know how the mistletoe (*Loranthus*), which is now very plentiful, was spread over this area, for these birds are extremely scarce now, and unless they were formerly far more numerous they could never have accounted for the distribution of so much seed."

Captain White wrote regarding Central Australia: "Wherever mistletoe was found throughout the ranges so sure was this little bird found, their sharp piercing call would often be heard amongst the myall scrub; in some places there has hardly a myall tree that had not a large bunch of mistletoe hanging

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to its branches," and later, Captain S. A. White has sent me the following note: "I have met with the Flowerpecker in every state I have visited; they seem to be found wherever the mistletoe (*Loranthus*) is found and the berries of this parasitical plant seem to be their chief food, although I have found insects just swallowed by this bird. The Mistletoe-Bird shifts about according to food supply and when the species of *Loranthus* has finished fruiting they move off to another district where another variety is in fruit. The note is a loud and sharp one for so small a bird. I have found them nesting in South Australia in September and October, and their beautiful purse-like nest is generally placed in a sapling not far from the ground. They will feed upon the pepper-tree berries."

Mr. Thos. P. Austin has sent me from Cobbara, New South Wales: "Is fairly numerous throughout the whole district, but more plentiful in the heavier timbered forests and thick scrubs. Usually met with in pairs, but sometimes small flocks of about half a dozen may be seen flitting about the same tree. The males are rather pugnacious and will chase each other, or even the females, from tree to tree, darting and twisting about through the branches, sometimes near the ground, or even high in the air. Seldom are they still for long, and even when perched they often have a tremulous motion of their wings. The nest is a pear-shaped, somewhat purse-like structure, usually suspended from a single twig in a sapling, composed of cobwebs and vegetation down, covered with the decaying sawdust-like substance ejected from timber by wood-boring beetles and often the fallen half-dead wattle blooms, all wonderfully woven together in such a manner as to form a sort of an elastic felt. The entrance is a long-shaped oval slit, which widens out as the bird enters to almost close again when she is inside. It is funny to see a bird entering a nest and, once inside, the nest stretches out with every movement of the bird. The clutch is usually three, and I have examined nests containing eggs from September 15th till end of November."

Mr. Tom Carter has written me: "The Flowerpecker was seen occasionally, in the scattered bushes growing on the North-west Cape ranges, and sometimes in Mangroves in that vicinity, but were never numerous. The only other locality in which I saw them was in thick scrubby country around Mullewa on the Murchison railway."

Mr. J. P. Rogers' notes read: "Both at Marngle Creek and Mungi this species was found to be thinly distributed. In fact it is found all over West Kimberley, but I have never found it very numerous anywhere. In some of the gorges of the Grand Ranges where there are many mistletoes growing on a species of broad-leaved wattle I have seen more of these birds than in any other locality. At Cooper's Creek, Melville Island, Nov. 20th, 1911, very

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few of these birds seen to date and on Jan. 14th, 1912, very few were seen on the north side of the island."

Barnard found it: "A common bird in most localities about the McArthur. It was very often seen feeding in the mistletoe which is very plentiful in that locality. Several nests suspended from twigs at the top of tall stringy-bark saplings were found."

McLennan noted: "King River. An occasional bird seen in patches of scrub and amongst bushes at springs. Port Bradshaw. An occasional bird seen in the forest country."

Macgillivray simply observed: "Common in the Gulf country and at Cape York."

Campbell and Barnard observed from the Rockingham District: "The cheery chirps of the *Dicaeum* often betrayed its presence."

Lawrence and Littlejohns have published a detailed account of the Nesting Habits of the Mistletoe-Bird, accompanied by delightful photographs of the birds at their nest feeding young. This should be referred to by everyone at all interested in this subject.

Le Souëf and Macpherson record from Sydney, the first locality whence this bird was described: "Is a friendly little bird and not much disturbed by human presence."

There is little to record in connection with the technical history of this species.

It was first described by Shaw and Nodder in the *Naturalists' Miscellany*, and Latham in his *Suppl. Index Ornith.* accepted this specific name but transferred the species to the genus *Sylvia*, at the same time describing *Sylvia rubricollis* thus: "*S. caerulea subtus alba, jugulo pectore que eoccineo-rubros* :

Crimson-breasted Warbler, Gen. Syn., Sup. II., p. 250, 37.

Habitat in Nova Hollandia.

Crimson-breasted Warbler. Size uncertain; bill and legs brown; plumage above blue; beneath white; fore-part of the neck and breast fire-crimson.

Inhabits New South Wales."

When G. R. Gray examined the Lambert drawings he identified the one upon which this name was based as of *Dicaeum hirundinaceum* without any doubt.

When Sharpe examined the Watling drawing he wrote:

"No. 204. Swallow Warbler, Lath., Gen. Syn., Suppl. II., p. 250.

Sylvia hirundinacea Lath., Ind. Orn. Suppl., p. LV.

Dicaeum hirundinaceum (Shaw and Nodder) Sharpe, Cat. B. x., p. 19.

No. 205. Swallow Warbler, Lath."

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Watling gives the following note: "The natural size. This is a scarce bird and well resembled, and the only one we have yet seen; the blue feathers on this bird are of a beautiful changeable blue."

No. 206. Crimson-breasted Warbler, Lath., Gen. Syn., Suppl. II., p. 250.

Sylvia rubricollis Lath., Ind. Orn. Suppl., p. LV.

Watling gives the following note: "Native name Bood-dang. Natural size."

No. 207. Crimson-breasted Warbler, Lath.

Watling says: "Natural size."

In my 1913 "List" I placed *Sylvia rubricollis* Lath. in Appendix B., p. 329, writing: "Founded on Plate 207, not 206, as Sharpe gave, and this does not appear to be *Dicæum hirundinaceum*, as was determined by Gray."

It is obvious that Latham gave his name *not* to No. 207, as that states "Natural size," and he wrote "Size uncertain"; it may have been founded on a Lambert drawing as Gray decided, but the description is sufficient to identify the name with this species.

It is important to decide this as the name may yet come into use, though it is to be hoped that such a change will not be made.

Shaw and Nodder called this bird *Motacilla hirundinacea* in 1792.

In the *Portland Catalogue* published in 1786 (Solander) or rather the editor (possibly Humphrey) recorded on p. 174:

"*Motacilla hirundinacea*. See Mr. Lightfoot, Philos. Trans., 1785."

At the place quoted Lightfoot described the Reed-Warbler under the name *Motacilla arundinacea*, and apparently the *Portland Catalogue* name is an error. It has been argued that some errors are valid names, e.g., *Opopsitta*, in which case this bird's name would become *Microchelidon rubricollis*, and the name of the British Reed-Warbler *Acrocephalus hirundinaceus*. In this case I do not anticipate such an alteration but record the facts as someone else may later "discover" the names, this being the first published intimation of the complication.

The species ranges all over Australia without showing much variation, but does not occur in Tasmania, nor have I seen a very close ally from New Guinea, although this bird is common at Cape York. It is such facts as these that constitute the most interesting features in Australian ornithology, suggesting its stability since its arrival in Australia after the separation of Tasmania from the mainland and its spreading backwards into the Cape York district. When I drew up my "Reference List" in 1912 I separated three forms as

Dicæum hirundinaceum hirundinaceum (Shaw and Nodder).

South Queensland, New South Wales,
Victoria, South-west Australia.

Dicæum hirundinaceum yoriki Mathews.

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"Differs from *D. h. hirundinaceum* in having a short tail—28 mm. ; typical birds 32 mm. Cape York, Queensland."

North Queensland.

Dicæum hirundinaceum tormenti Mathews.

"Differs from *D. h. hirundinaceum* in having a more slender bill. Point Torment, North-west Australia."

North-west Australia and Northern Territory.

In my 1913 "List" I used the genus name *AustroDicæum* and suppressed the North Queensland race and omitted the South-west Australian locality, but Alexander has reported from the Perth District: "Resident. Not common, but probably overlooked owing to its habit of keeping high in the trees."

Captain S. A. White also wrote regarding Central Australia: "Wherever (*Loranthus*) mistletoe grew upon the trees (there were many species of this parasite, some very beautiful) these bright little birds were seen; their sharp note cannot be mistaken. The range of this bird over Australia is indeed great."

Long and complete series may eventually allow of the discrimination of several geographical races, but probably these will be more easily differentiated by means of study of the females.

FAMILY—PARDALOTIDÆ.

GENUS—PARDALOTUS.

PARDALOTUS Vieillot, Analyse nouv. Ornith.,
 p. 31, April 14th, 1816. Type (by
 monotypy) *Pipra punctata* Shaw and Nodder.
Spizites Illiger, Abhandl. der Acad. Berlin,
 1812-1813, p. 230, 1816. Type (by
 monotypy) *Pipra punctata* Shaw and Nodder.

PARDALOTES only occur in Australia and Tasmania and I consider they constitute a family apart. These are very small birds with short stumpy bills, long wings, short tail and medium legs and small feet.

The bill is very short, somewhat laterally compressed, deeper at the base than wide, the lower mandible almost as stout as the upper mandible. The culmen is strongly arched, keeled, the tip a little decurved, with a notable posterior notch succeeded by a straight edge; the nostrils appear as slits placed at the base of the bill and are operculate but half hidden by frontal feathering; the under mandible stout, the interramal space very small and fully feathered, the gonys distinctly upcurved; no rictal bristles.

The wing has the first primary very minute so that it is entirely hidden by the coverts and is generally written of as absent, the real second being spoken of as the first; this is exceeded by the second and third which are subequal and longest, and the so-called fourth is a little less than the first, the rest regularly decreasing to the secondaries which are fairly long.

The tail is very short and square, the tail-coverts, both upper and under, reaching almost to the end of the tail.

The legs are comparatively long and slender, the tarsus booted in front and bilaminate posteriorly; the toes are slender and the claws sharp; the middle toe longest, but the hind-toe and claw nearly as long as the middle toe and claw, the hind-claw stronger; the inner and outer toes subequal and the inner toe and claw a little longer than the middle toe alone.

As showing how generally true conclusions based upon facts are, I will quote Gould's review of this group: "This form is peculiar to Australia, in every portion of which great country, including Tasmania, one or other of the

PARDALOTUS.

species are to be found ; some of them associated in the same district (*sic*), and even inhabiting the same trees, while in other parts only a single species exists ; for instance, the *P. punctatus*, *P. quadragintus* and *P. affinis* inhabit Tasmania ; on the whole of the southern coast of the continent from east to west *P. punctatus* and *P. striatus* are associated ; the north coast is the cradle of the species I have called *uropygialis*, and the east coast that of *melanocephalus*, from both of which countries the others appear to be excluded ; the true habitat of the beautiful species I have described as *P. rubricatus* is the basin of the interior."

The ranges of some of these forms have been extended and the values of some of the species depreciated, yet the results to-day are very similar. The species *uropygialis* is only subspecifically separable from *melanocephalus*, so that the latter extends over all northern points while *rubricatus*, although it is typically an interior form, has extended its range out on to the north-west coast and also into the Cape York peninsula, apparently up the western side.

The occurrence of three distinct species of the family in Tasmania is most extraordinary, especially the occurrence of a form apparently showing the most primitive style of coloration. The series can be divided into four ; whether they are considered genera or subgenera is of little real importance, but the occurrence of three distinct forms in Tasmania indicate their recognition as of generic value, especially as the group is isolated in Australia and Tasmania and has evolved away from every near ally, so that these are now unknown. The queer trait of building a domed nest in a burrow is a character of much importance, suggesting they built domed nests in the open before they burrowed, and their stout bills have developed through that burrowing habit. That the Tasmanian form retaining an ancestral style of coloration should have the thickest, most parrot-like bill is very curious and not easily determined. This form which I have called *Nesopardalotus* seems obviously the more modestly coloured bird from which *Pardalotus s. str.* has developed, but as the latter now also lives in Tasmania and on the mainland all through the south from east to west, it appears suggestive that the northern birds should have evolved on the mainland and then re-entered Tasmania. It is peculiar that *Nesopardalotus* should occur on King Island but not on the Flinders group where *punctatus* lives, and suggests the same conclusion as the study of the Streperoid birds instigated, viz., that the Flinders Island connection with the mainland lasted after the King Island passage was broken through, and that the Bassian Straits were formed by pressure from the west, not east. Apparently *Pardalotinus*, which was coexistent with *Pardalotus* on the continent, passed into Tasmania at the same time as *Pardalotus*. On the mainland there had been three distinct forms developing, the interior producing the

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most peculiar *rubricatus* which I now call *Dipardalotus*. This interior form has also modified the family call-notes in a distinct manner and has vigorously extended its range into the north, and may in the future oust some of the weaker forms. Apparently *Nesopardalotus* is being eliminated in the struggle for existence, and the better equipped *Pardalotus* and *Pardalotinus* will alone survive in Tasmania.

The superficial features that attract remark may be shown as follows:

Coloration obscurely greenish with dull specklings; dull yellowish throat; no eyebrow; no coloured tipping to primary coverts; size small

Nesopardalotus.

Black head and eyebrow developed by all the rest.

Black head spotted with white; speckling on back developed into spots; coloured rump; no coloured tipping to primary coverts

Pardalotus.

Black head spotted with white; back speckling lessening and in some cases vanished; rump nearly uniform with back; no coloured tipping to primary coverts

Dipardalotus.

Black head spotting diminishing, in some cases vanished; back uniform, speckling completely eliminated; coloured rump; coloured tipping to primary coverts notable

Pardalotinus.

Or they can be arranged this way

Head uniform with back

Nesopardalotus.

Head black; tipping to primary coverts

Pardalotinus.

Head black spotted with white

No tipping to primary coverts; rump coloured;

bill short. Sexes differing

Pardalotus.

Rump nearly uniform with back; bill long.

Sexes alike

Dipardalotinus.

That these forms are still developing is certain, as the geographic variability is accompanied by undetermined specific variation in the case of *Pardalotinus*; thus in the North the rump coloration varies from dull chestnut to bright yellow and the spotting of the head is quite lost, a pure black head being seen; in the South the spotting on the head has diminished into streaks towards the occiput and the rump coloration has remained dull. However, the tipping to the wing-coverts varies from yellow to scarlet and the white edging on the primaries varies from a single line to a large white patch. These characters do not yet seem specifically fixed, though various observers have attempted to suggest differentiation in the habits of the forms, showing these differences, which are in some places found associated, in others geographically separated into different series.

PARDALOTUS PUNCTATUS.

SPOTTED PARDALOTE (DIAMOND-BIRD).

(PLATE 507.)

PIPPA PUNCTATA Shaw and Nodder, Naturalists' Miscellany, Vol. IV., pl. 111, Aug. 1st, 1792: New South Wales.

Pipra punctata Shaw and Nodder, Naturalists' Miscellany, Vol. IV., p. 111, 1792; Latham, Index Ornith., Suppl., p. lvi., 1801.

Speckled Manakin Latham, Gen. Synops. Birds, Suppl. II., p. 253, 1801.

Pardalotus punctatus Vieillot, Nouv. Dict. d'Hist. Nat., nouv. ed., Vol. XXIV., p. 529, 1818; Vigors and Horsfield, Trans. Linn. Soc. (Lond.), Vol. XV., p. 237, 1827; Gould, Synops. Birds Austr., pt. II., pl. (22), 1837; *id.*, Birds Austr., pt. xv. (Vol. II., pl. 35), June 1st, 1844; *id.*, Handb. Birds Austr., Vol. I., p. 157, 1865; Ramsay, Proc. Zool. Soc. (Lond.), 1875, p. 584 (N.Q.); *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 179, 1878; Sharpe, Cat. Birds Brit. Mus., Vol. X., p. 58, 1885; Legge, Papers Proc. Roy. Soc. Tasm., 1886, p. 241, 1887; Ramsay, Tab. List Austr. Birds, p. 3, 1888; Hall, Key Birds Austr., p. 46, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 444, 1901; Belcher, Emu, Vol. I., p. 125, 1902 (Vic.); A. G. Campbell, *ib.*, Vol. II., p. 15, 1902 (Vic.); Milligan, *ib.*, p. 74, 1902 (W.A.); *id.*, *ib.*, Vol. III., p. 19, 1903 (W.A.); Barrett and Nicholls, Victorian Naturalist, Vol. XXI., p. 164, 1905; Mellor, Emu, Vol. VI., p. 166, 1907 (Tas.); Hill, *ib.*, Vol. VII., p. 20, 1907 (Vic.); North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 225, 1907; Mathews, Handl. Birds Austral., p. 91, 1908; A. G. Campbell, Emu, Vol. IX., p. 22, 1909 (Review); Fletcher *ib.*, p. 81 (Tas.); Cleland, *ib.*, p. 224, 1909 (Food); Chandler, *ib.*, Vol. X., p. 113, 1910 (Review); Ingle, *ib.*, p. 125 (Vic.); Broadbent, *ib.*, p. 235 (N.Q.); Littler, Handb. Birds Tasm., p. 66, 1910; Whitlock, Emu, Vol. X., p. 340, 1911 (W.A.); Cleland, *ib.*, Vol. XI., p. 90, 1911 (Food); *id.*, *ib.*, Vol. XII., p. 14, 1912 (Food); Mellor and White, *ib.*, p. 163, 1912 (Flinders Island); Agnew, *ib.*, Vol. XIII., p. 96, 1913 (Q.); S. A. White, *ib.*, Vol. XIV., p. 143, 1915 (Mallacoota); Dove, *ib.*, Vol. XV., p. 240, 1916 (Tas.); Lawrence and Littlejohns, *ib.*, Vol. XVI., p. 52, 1916 (Vic.); Dove, *ib.*, Vol. XVIII., p. 202, 1919 (Tas.); Lord, *ib.*, Vol. XIX., p. 106, 1919 (Tas.); Le Souëf and Macpherson, *ib.*, Vol. XX., p. 90, 1920 (N.S.W.); Alexander, *ib.*, p. 167, 1921 (W.A.).

Pardalotus australis Stephens in Shaw's Gen. Zool., Vol. XIII., pt. II., p. 252, 1826: New South Wales.

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Pardalotus xanthopygus McCoy, Annals Mag. Nat. Hist., Ser. 3, Vol. XIX., p. 184, March 1st, 1867: North-west Victoria; *id.*, *ib.*, Vol. XX., p. 177, 1867; Gould, Birds Austr., Suppl., pl. 8, pt. iv., Dec. 1st, 1867; Ramsay, Prec. Linn. Soc. N.S.W., Vol. II., p. 180, 1878; Sharpe, Cat. Birds, Brit. Mus., Vol. X., p. 59, 1885; Ramsay, Tab. List Austr. Birds, p. 3, 1888; Hall, Key Birds Austr., p. 46, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 445, 1901; North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 227, 1907; Mathews, Handl. Birds Austral., p. 91, 1908; Howe, Emu, Vol. VIII., pp. 133-137, 1909 (Vic.); A. G. Campbell, *ib.*, Vol. IX., p. 22, 1909 (Review); Howe, *ib.*, p. 233, 1910 (Vic.); S. A. White, *ib.*, Vol. XII., pp. 5-7, 1912 (S.A.); Wilson, *ib.*, p. 38 (Vic.); Chandler, *ib.*, Vol. XIII., p. 43, 1913 (Vic.).

Pardalotus leadbeateri Ramsay, Ibis, 1867, p. 255, April 1st; for same as preceding: N.W. Victoria.

Pardalotus punctatus punctatus Mathews, Nov. Zool., Vol. XVIII., p. 389, 1912; *id.*, List Birds Austr., p. 255, 1913.

Pardalotus punctatus interjectus Mathews, Nov. Zool., Vol. XVIII., p. 389, Jan. 31st, 1912: (Ringwood) Victoria; *id.*, List Birds Austr., p. 255, 1913; Belcher, Birds Geelong, p. 320, 1914.

Pardalotus punctatus xanthopygus Mathews, Nov. Zool., Vol. XVIII., p. 389, 1912; *id.*, List Birds Austr., p. 255, 1913.

Pardalotus punctatus leachi Mathews, Nov. Zool., Vol. XVIII., p. 389, Jan. 31st, 1912: Tasmania; *id.*, List Birds Austr., p. 255, 1913.

Pardalotus punctatus whitlocki Mathews, Nov. Zool., Vol. XVIII., p. 389, Jan. 31st, 1912: Wilson's Inlet, South-west Australia; *id.*, List Birds Austr., p. 256, 1913.

Pardalotus punctatus millitaris Mathews, Austral Avian Record, Vol. I., pt. 4, p. 96, Sept. 18th, 1912: Cairns, Queensland; *id.*, List Birds Austr., p. 255, 1913; Campbell and Barnard, Emu, Vol. XVII., p. 30, 1917.

DISTRIBUTION. Eastern Australia from Cairns, North Queensland, New South Wales, Victoria, through South Australia to South-west Australia and Tasmania.

Adult male. Crown of head black with a white spot at the tip of each feather; nasal bristles black; lores and a superciliary line whitish; sides of face and cheeks grey minutely barred with white like the sides of the neck; hind-neck blackish with pale subapical spots and dusky-grey bases to the feathers; back similar but the subapical spots larger; scapulars olive-grey very narrowly fringed with black at the tips; wings black marked with white at the tips of the feathers; inner webs of flight-quills blackish-brown margined with white; rump and short upper tail-coverts dark chestnut, some of the feathers very slightly fringed with black; the long ones tipped with red; tail black with a subapical spot of white on each feather; chin, throat, and fore-neck yellow like the under tail-coverts; breast, abdomen, sides of body, flanks and thighs dull fawn-colour; axillaries similar but paler; under wing-coverts white; under-surface of flight-quills greyish-brown margined with white; lower aspect of tail similar to its upper-surface. Bill black, feet fleshy. Total length 87 mm.; culmen 6, wing 59, tail 29, tarsus 17. Figured. Collected at Ringwood, Victoria, on the 24th of July, 1909, and is the type of *P. p. interjectus*.

Adult female. Crown of head dusky with buffy-white spots at the tips of the feathers, all of which are margined with black; hind-neck and back drab-grey with buff

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spots at the tips of the feathers, which are fringed with black, the buff spots become larger and richer in colour on the lower back and rump; short upper tail-coverts cinnamon-rufous, becoming dark red on the long ones; scapulars similar to the back but without the buff spots; outer aspect of wing blackish with a white spot at the tip of each feather except on the bastard-wing and primary-coverts, which are uniform; inner webs of flight-quills somewhat paler than the outer ones and margined with dull white; lores and a line over the eye buffy-white; sides of face, sides of neck, and cheeks dusky-grey; chin, throat and fore-neck whitish-yellow similar to the centre of the breast and abdomen; sides of body and thighs ochreous; under tail-coverts canary-yellow; axillaries and under wing-coverts white; under-surface of flight-quills hair-brown fringed with white; lower aspect of tail similar to its upper-surface. Eyes grey, bill black, feet fleshy. Total length 94 mm.; culmen 6, wing 59, tail 30, tarsus 18. Figured. Collected at Ringwood, Victoria, on the 24th of July, 1909 (a pair with the male).

Young female. Top of head dark brown with ochreous tips to the feathers which impart a spotted appearance; the hind-neck and upper back dusky-brown, the spots are more inclining to rufous and the feathers narrowly fringed with blackish; lower back, rump, and upper tail-coverts cinnamon-rufous; wings black, the feathers everywhere tipped with white; tail also black tipped with white, more broadly on the outermost feathers; under-surface yellowish-white; sides of body golden-buff; under tail-coverts orange-yellow. Collected in Bass Straits.

Nestling. Resembles the female.

Pardalotus punctatus punctatus.

Eggs. Three to six eggs form the clutch; four usually, and five and six very rarely. A clutch of four taken at South Grafton, Clarence River, New South Wales, on the 24th of November, 1892, is pure white. Rather round in shape; surface of shell fine, smooth and glossy. 17-18 mm. by 14-15.

Nest. A domed and covered over, and rather rounded structure, with entrance on the side, and placed in a hollowed-out chamber at the end of a narrow tunnel about one to three feet long, made by the birds into a bank, and frequently along the upright bank of a creek, dam, or road cutting. The tunnel leading to the nest generally slopes slightly upwards. The nest is made almost entirely of strips of very dry, soft bark, and a great quantity is used in its construction. It measures from $3\frac{3}{4}$ to $5\frac{1}{2}$ inches in diameter over all by $2\frac{1}{4}$ inches to $2\frac{3}{4}$ inches across inside.

Breeding-months. July to end December.

Pardalotus punctatus millitaris.

Eggs. Four eggs usually form the clutch. A clutch of four eggs taken at Kirrama Range, Cardwell, North Queensland, on the 28th of October, 1916, is pure white. Swollen ovals in shape; surface of shell fine, and very glossy. 15-16 mm. by 12.

Nest. A small domed-shaped structure built of wirey grass and bark, and placed in a rounded and hollowed-out chamber at the end of a small tunnel in the back of a creek, and sometimes in the earth fastened to the roots of a fallen and uprooted tree. Nest closely resembles that of *P. p. punctatus*.

Breeding-months. July to December.

Pardalotus punctatus interjectus.

Nest and eggs very similar to those of *P. p. punctatus*. A clutch of four eggs taken at the Dandenong Ranges, Victoria, on the 1st of January, 1909, measures:—A, 16 by 13 mm.; B, 16 by 13 mm.; C, 16 by 13 mm.; D, 15 by 13 mm.

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Pardalotus punctatus xanthopygus.

Eggs. Three to four eggs form the clutch. A clutch of four taken at Murtoa, Victoria, on the 4th of October, 1896, is pure white. Swollen ovals in shape; shell fine, smooth and glossy. 16-17 mm. by 13.

Nest. A perfectly round structure of bark, and placed in the hollowed-out chamber at the end of a tunnel in the ground; the tunnel often being made into a flat surface, and travelling in a sloping direction for two or three feet.

Breeding-months. August to end November.

WHEN Shaw and Nodder described this species they gave no field-notes, and when Latham included it in his Supplement II. to the *General Synopsis of Birds* he knew nothing, acknowledging: "I am indebted to the pencil of General Davies for these descriptions, taken from specimens in the possession of Captain King. These seem to have some affinity to the Striped-headed Manakin."

Vigors and Horsfield recorded: "We are informed by Mr. Caley that 'this species is called *Diamond-Bird* by the settlers, from the spots on its body. By them it is reckoned a valuable bird on account of its skin. It is not very plentifully to be met with. It inhabits both forest-land and brushes; at least I have seen it in both.'"

Gould's account is mainly concerned with the peculiarity and beauty of the nesting site and nest, but I quote: "No species of the genus *Pardalotus* is more widely and generally distributed than the Spotted Diamond-Bird, for it inhabits the whole of the southern parts of the Australian continent from the western to the eastern extremities of the country, and is very common in Tasmania. It is incessantly engaged in searching for insects among the foliage, both of trees of the highest growth and of the lowest shrubs; it frequents gardens and enclosures as well as the open forest, and is exceedingly active in its actions, clinging and moving about in every variety of position both above and beneath the leaves with equal facility. . . The song is a rather harsh piping note of two syllables often repeated."

Mr. Thos. P. Austin of Cobbora, New South Wales, has written: "Not nearly such a common species in these parts as *Pardalotus ornatus*, but still it may be in greater numbers than it appears, because at times it is rather silent, and as it often keeps high up in the larger trees it can easily escape notice. I have never met with it in the open country; it seems to keep in the thicker forests. Most of the nests I have noticed here have been mouse-like holes drilled into the ground anywhere amongst fallen leaves in forest country, and have only been discovered by a bird flushing from the nest almost at my horse's feet as I rode past; if the bird did not flush the nest would

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seldom be found. The nesting tunnel is drilled into the ground for about a foot, being only a few inches in depth, with a nesting chamber at the end, which often comes up to almost the surface of the ground. The nest itself is wonderfully neatly constructed, being composed mostly of fine inner bark-threads and when removed from the ground holds together intact."

Mr. L. G. Chandler's notes read: "The Spotted Pardalote (*P. punctatus*) is common in the vicinity of the Dandenong Ranges, Victoria. When wandering through the bush you may hear their peculiar call at almost any time of the day. This call consists of two notes, the second note a trifle lower than the first. There are other calls. I have found the nesting tunnel in many places: in the base of an upturned tree; on flat ground following the course of a decayed root; in the side of a furrow in ploughed land; again, in the bank of a creek and lately in a tree-hollow. In the last named case it, at the time, was the first record of this Pardalote's nest being found in a tree, but this may commonly occur. The banks of the Cardinia Creek (Beaconsfield) offer ideal nesting sites for this species. The soil being of a loose, sandy nature is especially suitable for them to tunnel in. Any noise in the vicinity of the nesting tunnel is sufficient to bring the bird out should it be sitting. In many cases it would be impossible to detect the tiny burrow—that on an average is little more than one and a half inches in diameter—were it not for the bird betraying it in this manner. One nest we found at Frankston contained one healthy young bird about a week old and the dried skeletons of two others. Messrs. Barrett and Nicholls have recorded a similar instance—'on opening one of the tunnels we found five nestlings. Three of these were dead, being half eaten by the larvæ of some species of dipterous fly of the genus *Calliphora*.' A burrow may be used for two or more consecutive seasons for I found a nest that had been built on the decayed remains of an old nest. It was a foot in the damp, sandy soil and contained the unusual number of five eggs. In a bank where the earth is firm a slight ridge is often noticed in the centre of tunnel near the entrance. This is raised by the birds when expelling the soil with their feet. This sign is sufficient to show you the burrow is, or has been, tenanted by a Pardalote. Both sexes assist in the construction of the nest and the work of incubation. In the task of feeding the offspring each take an equal share. In December a number of young birds may be seen following their parents, uttering a faint piping whistle at intervals. At the same time nests building or containing fresh eggs are observed. The young of this species are hatched naked and blind. At a week old the gape is cream, bill horn, frontal quills not yet broken, crown yellowish-buff with black tips, upper tail-coverts and rump buff, tail black with two white spots on central quills, two outer quills white with black bases,

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primaries black tipped white, throat pale buff, sides of chest and abdomen very pale buff, feet bluish-grey, irides brown."

Mr. F. E. Howe also wrote: "Nests are found from early September to January, so probably two broods are reared. The burrows are drilled horizontally and vary from one to three feet long. The call sounds like 'Twitt-lem,' the first note high and the second considerably lower and with a perceptible pause between. I have often been amused whilst watching this bird utter its call to see it stand erect to utter the first note and crouch on the limb to emit the next. Unless you are looking at the bird it is difficult to tell whence the sound comes. Frequently the first note seems to come from one direction, the second from another. Both sexes help to dig the burrow and feed the young, the female alone incubating the eggs."

Mr. Tom Carter's note reads: "Red-rumped Pardalotes (*P. punctatus*) are very numerous in Karri country (*Eucalyptus diversicolor*) in the extreme south-west corner of West Australia, where they are known by the settlers as 'head-ache' birds, as they say the continual iteration by thousands of these birds of their monotonous note 'Slee-p ba-bec' causes headache to the listeners. *Pseudogerygone culicivora* utters a very similar song. *Pardalotus punctatus* is not uncommon in Blue Gums (*Eucalyptus megacarpa*) around Albany. Does not seem to like Jarrah country. Never seen about Broome Hill, but once shot two in Marlock scrub 40 miles east of Broome Hill."

Milligan has recorded it as "Fairly numerous in the 'marlock' clumps, but not seen elsewhere," from the Stirling Ranges.

Alexander, from the Perth district, wrote: "Resident. Not common, but sometimes the numbers are greatly increased by arrivals of birds, presumably from further inland."

Dove has recorded nesting habits of this species in Tasmania from which I quote: "The male bird had left the burrow as we approached, showing that he takes *some part*, at any rate, in the incubation. . . . The Yellow-tipped Pardalote is the lively little bird which appears in numbers in the springtime among the big eucalypts, calling incessantly 'Pick-it-up! pick-it-up!' or, as some interpret the notes, 'Wit-e-chu.' While living in the forest near Table Cape, North-west Tasmania, I used to notice about the same time each spring this familiar call resounding among the trees where it had not been heard all through the winter months, and from this fact, and not seeing any of the birds themselves, I believe the Yellow-tipped species to be a migrant, although the Spotted Pardalote (*P. punctatus*) stays with us all the year." A little later Dove wrote: "The delicate 'Pick-it-up' call of the Tree Diamond-Bird or Pardalote (*P. punctatus*) was another sound which greeted the ear on this spring day. One of the smallest of our migrants,

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its voice is usually first heard during the last week of August or the first few days of September."

Captain S. A. White has written me: "*P. xanthopygus* is not a common bird in South Australia, although my father's notes state that they were fairly plentiful at the Reedbeds in the sixties. Their note is very like that of *punctatus* and their habits seem similar."

Mr. Edwin Ashby has written me: "This (*P. xanthopygus*) is usually the common species wherever the soil is sandy in the neighbourhood of Blackwood, but for some reason they deserted our neighbourhood during last spring (1909), probably because of the exceedingly wet winter (a record); most likely the sandy soil with clay subsoil held the water like a sponge beyond the usual time for breeding and the birds had to search elsewhere. Most years a pair nest in the ploughed ground of my orchard quite near the house. While I try to preserve the nest from molestation, on occasions it has been ploughed up and other times the cat has got the young. The burrow is in soft sand about 15 to 18 inches deep, never far from the surface altho' often started on flat ground. The end chamber is well lined with grass, making either a very deep cup or a slightly domed nest. I have collected this species in the Mallee scrub on York Peninsula and also in the scrub near Mannum on the River Murray. *Pardalotus punctatus* is less common than *P. xanthopygus* at Blackwood, South Australia. I have found it numerous in Tasmania, Victoria, and exceptionally numerous in the New England district in New South Wales. The shrill whistle of the cock bird in two sharp notes, the first shrill and the second considerably lower, is the same as that of the above, whose monotonous cry is heard everywhere in springtime amongst the sapling gums in the neighbourhood of Blackwood."

Mr. F. E. Howe's notes read: "At the Kow Plains during October, 1909, we noticed a fair number of this pretty little creature (*P. xanthopygus*). The call-note is a soft high tinkling note, a monotone, and as the bird is ventriloquial it is very hard to locate it. We saw some burrows that had just been started, while others contained young birds nearly fully fledged. On Oct. 10th I found a burrow in the sand from which I flushed the female, and on digging it out found it contained four young so well fledged that they all took wing but one. The plumage in this specimen was identical with that of the female, but the gape was cream in colour and the inside of the mouth orange."

Mr. A. Mattingley sent me: "I have found the mouse-like burrow of this most beautiful of the Pardalotes (*P. xanthopygus*) situate in the sand in the Mallee. The burrow was tunnelled directly into the sand from a flat surface, and twenty-two inches in was a nest, perfectly spherical in shape, composed entirely of soft bark in which were cradled four roundish white

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eggs. For the most part they frequent the arid regions of the Mallee and are usually to be met with in pairs as they hunt for insects ensconced in the leaves of the Mallee scrub (*Eucalyptus dumosa*). It is interesting to observe how carefully these birds search any place that is likely to conceal any insect life, and while they are doing so they utter at times a sweet 'Tink-Tink' note. Most of the Honey-eaters, especially the graceful Honey-eater (*Ptilotis ornata*), show a combative attitude towards this lovely little bird. No doubt they resent the Pardalote's presence because they compete for the insect life of the Mallee eucalypts on which both varieties of birds feed."

From Eyre's Peninsula Capt. S. A. White recorded: "*Pardalotus xanthopygus* takes the place of *P. ornata*, which seems to keep to the larger timber, in which they nest; while *P. xanthopygus* frequents the low scrub and nests in the soft soil."

Wilson, from the Victorian Mallee, wrote: "This pretty little form was always present on the sand hills, where many of them had started nesting. At Ouzen nests were found containing incomplete clutches, but at Kow Plains they were not so forward, having just started tunnelling. Several of their excavations were noticed along the tracks that do service as roadways. Their bell-like note is exactly similar to that of *P. punctatus*, but not quite so loud."

The technical history of this species shows only one important item accompanied with notable geographical variation. One of the earliest New South Wales birds to be described, Gould noted its wide distribution without separating any subspecies; but in 1866-7 the Mallee bird was seen to differ and at present I believe this species has the honour of showing the first recognised Mallee form. This Mallee form was simultaneously named by McCoy and Ramsay, apparently from birds supplied by the same collector (Leadbeater); each sent their descriptions to England to be published, but while Ramsay sent his to the Zoological Society of London, McCoy forwarded his to the *Annals and Magazine of Natural History* and this was published on March 1st, 1867; in the *Ibis* a note was furnished drawing attention to the fact that, although Ramsay's paper was read on Feb. (28?), McCoy's name was published on March 1st, and asking for advice. The result was that Ramsay's account was never published.

McCoy's species was at once recognised, but until I prepared my "Reference List" in 1912 no consideration of the species as a whole had been undertaken. Upon arranging my series geographically it was seen that variation was pronounced throughout the species and that really it was only a matter of writing down the differences and naming the subspecies. It was also seen that the species *xanthopygus* was merely the Mallee subspecies, but,

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as in the case of some other species, differing more from its nearest neighbour than the two most widely separated, geographically, forms do.

I arranged the species in five subspecies thus :

Pardalotus punctatus punctatus (Shaw and Nodder).

New South Wales.

Pardalotus punctatus interjectus Mathews.

"Differs from *P. p. punctatus* in its much paler coloration above and below, especially on the mantle, the head being distinctly marked off as a cap. (Ringwood) Victoria."

East Victoria.

Pardalotus punctatus xanthopygus McCoy.

North-west Victoria (Mallee) and South Australia.

Pardalotus punctatus leachi Mathews.

"Differs from *P. p. punctatus* in being darker above and below."

Tasmania.

Pardalotus punctatus whitlocki Mathews.

"Differs from *P. p. punctatus* in being more buffy below and in having the rump not so red. Wilson's Inlet, S.W.A."

South-west Australia.

A little later I added

Pardalotus punctatus militaris Mathews.

"Differs from *P. p. punctatus* in being darker above, lighter below, and in having a much heavier bill, shorter wing, and a more yellowish vent. Cairns, North Queensland."

North Queensland.

These six were included without alteration in my 1913 "List."

Campbell and Barnard, writing from the Cairns district, state: "We were greatly surprised to hear the duleet notes of this pretty Pardalote in the tall timber (*eucalypts*) about our camp on the Kirrama tableland. Ramsay regarded it as rare here. Not far from our tent a pair of birds had enlarged a hole in a hollow part of a green gum-tree bole, and therein had made a nest. The nest was completely composed of fine dry grass, and measured in circumference 12 inches, the side entrance was $1\frac{1}{4}$ inches across. There was a full set of four eggs. Date 28/10/16. The birds answer to Mathew's subspecies *militaris*, from the Cairns district."

GENUS—PARDALOTINUS.

PARDALOTINUS Mathews, Austral Avian Record, Vol. I.,
pt. 5, p. 115, Dec. 24th, 1912. Type (by original
designation) *Pipra striata* Gmelin.

I DISTINGUISHED this form as: "Differs from *Pardalotus* in its stronger bill and much stouter legs and feet, and with the first primary of the wing longest; in *Pardalotus* the second and third primaries are longest and subequal, the first longer than the fourth."

The general characters are those of *Pardalotus* already given, but the nostrils are quite hidden by strong projecting nasal bristles, the tip of the bill is not so decurved, etc.

Key to the Species.

Head black, divided from back with white striations *P. striatus*.
Head black with no white striations on nape .. *P. melanocephalus*.

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PARDALOTINUS STRIATUS
(STRIATED PARDALOTE)

Order PASSERIFORMES.

Family PARDALOTIDAE.

No. 629.

PARDALOTINUS STRIATUS.

STRIATED PARDALOTE.

(PLATE 508.)

PIPRA STRIATA Gmelin, Syst. Nat., Vol. I., pt. II., p. 1,003, April 20th, 1789: "America australi" errore=Tasmania.

Pipra striata Gmelin, Syst. Nat., Vol. I., pt. II., p. 1,003, 1789; Latham, Index Ornith., Vol. II., p. 558, 1790 (Tasmania).

Striped-headed Manakin Latham, Gen. Synops. Birds, Vol. IV., p. 526; *id.*, *ib.*, Suppl. I., p. 188, 1787.

Pardalotus striatus Vieillot, Nouv. Dict. d'Hist. Nat., nouv. ed., Vol. XXIV., p. 530, 1818; Vigors and Horsfield, Trans. Linn. Soc. (Lond.), Vol. XV., p. 237 (footnote), 1827; Gould, Synops. Birds Austr., pt. II., pl. (22), 1837; *id.*, Birds Austr., pt. xv. (Vol. II., pl. 38), June 1st, 1844; *id.*, Handb. Birds Austr., Vol. I., p. 161, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 180, 1878; Milligan, Emu, Vol. II., p. 172, 1903 (W.A.); S. A. White, *ib.*, Vol. XIII., p. 31, 1913; Chandler, *ib.*, p. 43, 1913 (Vic.); S. A. White, *ib.*, Vol. XIII., p. 128, 1914 (S.A.); Alexander, *ib.*, Vol. XVI., p. 33, 1916 (W.A.); Lawrence and Littlejohns, *ib.*, p. 50 (Vic.); D'Ombraïn, *ib.*, Vol. XVII., p. 236, 1918 (N.S.W.); S. A. White, *ib.*, Vol. XX., p. 128, 1921 (W.A.); Ashby, *ib.*, p. 135 (W.A.); Alexander, *ib.*, p. 167 (W.A.); D'Ombraïn, *ib.*, Vol. XXI., p. 65, 1921 (N.S.W.); McGilp, *ib.*, Vol. XXII., p. 285, 1923.

Pardalotus ornatus Temminck & Laugier, Planch. Color. d'Ois., 66^e livr. (Vol. IV., pl. 394), f. 1, June 10th, 1826: New South Wales; Sharpe, Cat. Birds Brit. Mus., Vol. X., p. 55, 1885; Ramsay, Tab. List Austr. Birds, p. 3, 1888; Hall, Key Birds Austr., p. 46, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 440, 1901; A. G. Campbell, Emu, Vol. II., p. 15, 1902 (Vic.); Milligan, *ib.*, p. 74 (W.A.); *id.*, *ib.*, Vol. III., pp. 11, 19, 22, 1903 (W.A.); H. E. Hill, *ib.*, pp. 107, 228, 1903-4 (W.A.); Lawson, *ib.*, Vol. IV., p. 135, 1905 (W.A.); A. G. Campbell, *ib.*, Vol. V., p. 144, 1906 (Kangaroo Island); Cleland, *ib.*, p. 207, 1906 (Kangaroo Island); North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 217, 1907; Hill, Emu, Vol. VII., p. 20, 1907 (Vic.); Austin, *ib.*, p. 31 (N.S.W.); Mathews, Handl. Birds Austral., p. 90, 1908; Howe, Emu, Vol. VIII., pp. 134-7, 1909 (Vic.); A. G. Campbell, *ib.*, Vol. IX., p. 22 (Review); Gibson, *ib.*, p. 75 (W.A.); Crossman, *ib.*, p. 89 (W.A.); Hall, *ib.*, p. 130, 1910 (S.A.); Whitlock, *ib.*, p. 210 (W.A.); Howe, *ib.*, p. 233 (Vic.);

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- Macgillivray, *ib.*, Vol. X., pp. 17, 24, 94, 1910 (N.S.W.); S. A. White, *ib.*, Vol. XII., pp. 2-7, 1912 (S.A.); Wilson, *ib.*, p. 38 (Vic.); Hill, *ib.*, p. 248, 1913 (Central Australia).
- Pardalotus affinis* Gould, Synops. Birds Austr., pt. II., pl. (22), April 1st, 1837: Tasmania; *id.*, Birds Austr., pt. I. (Vol. II., pl. 39), Dec. 1st, 1840; *id.*, Handb. Birds Austr., Vol. I., p. 163, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 180, 1878; Sharpe, Cat. Birds Brit. Mus., Vol. X., p. 57, 1885; Legge, Papers Proc. Roy. Soc. Tasm., 1886, p. 241, 1887; Ramsay, Tab. List Austr. Birds, p. 3, 1888; Hall, Key Birds Austr., p. 46, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 443, 1901; A. G. Campbell, Emu, Vol. II., p. 208, 1903 (King Island); Littler, *ib.*, Vol. III., p. 215, 1904 (Tas.); A. G. Campbell, *ib.*, Vol. IV., p. 123, 1905 (Vic. and Tas.); North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 221, 1907; Mellor, Emu, Vol. VI., p. 160, 1907 (Tas.); Mathews, Handb. Birds Austral., p. 90, 1908; A. G. Campbell, Emu, Vol. IX., p. 22, 1909 (Review); Fletcher, *ib.*, p. 81 (Tas.); Littler, Handb. Birds Tasm., p. 65, 1910; Thompson, Emu, Vol. XI., p. 40, 1911 (Tas.); Mellor and White, *ib.*, Vol. XII., p. 163, 1913 (Flinders Island); Dove, *ib.*, Vol. XV., p. 241, 1916 (Tas.); Kersey, *ib.*, Vol. XIX., p. 52, 1919.
- Pardalotus assimilis* Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 180, Jan. 1878: New South Wales; *id.*, *ib.*, p. 377; Sharpe, Cat. Birds Brit. Mus., Vol. X., p. 56, 1885; Ramsay, Tab. List Austr. Birds, p. 4, 1888; Hall, Key Birds Austr., p. 46, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 442, 1901; Belcher, Emu, Vol. I., p. 125, 1902 (Vic.); North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 220, 1907; Mathews, Handb. Birds Austral., p. 90, 1908; A. G. Campbell, Emu, Vol. IX., p. 22, 1909 (Review); Chandler, *ib.*, Vol. X., p. 114, 1910 (Review); Ingle, *ib.*, p. 125 (Vic.).
- Pardalotus striatus striatus* Mathews, Nov. Zool., Vol. XVIII., p. 387, Jan. 31st, 1912.
- Pardalotus striatus kingi* Mathews, *ib.*: King Island.
- Pardalotus striatus assimilis* Mathews, *ib.*, p. 388.
- Pardalotus striatus ornatus* Mathews, *ib.*; S. A. White, Emu, Vol. XVIII., p. 23, 1918 (S.A.).
- Pardalotus striatus substriatus* Mathews, Nov. Zool., Vol. XVIII., p. 388, Jan. 31st, 1912: (Ultima) Victoria; *id.*, Austral Av. Rec., Vol. I., p. 61, 1912.
- Pardalotus striatus subaffinis* Mathews, Nov. Zool., Vol. XVIII., p. 388, Jan. 31st, 1912: (Blackwood) South Australia; S. A. White, Emu, Vol. XV., p. 161, 1916 (S.A.).
- Pardalotus striatus murchisoni* Mathews, Nov. Zool., Vol. XVIII., p. 388, Jan. 31st, 1912: (Nully Pool) Murchison, West Australia.
- Pardalotus striatus westraliensis* Mathews, *ib.*: (Claremont, South-) West Australia.
- Pardalotus striatus rogersi* Mathews, *ib.*: Mungi, North-west Australia.
- Pardalotinus striatus striatus* Mathews, List Birds Austr., p. 257, 1913.
- Pardalotinus striatus kingi* Mathews, *ib.*
- Pardalotinus striatus substriatus* Mathews, *ib.*; Belcher, Birds Geelong, p. 323, 1914.
- Pardalotinus striatus subaffinis* Mathews, *ib.*
- Pardalotinus striatus ornatus* Mathews, *ib.*

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Pardalotinus striatus assimilis Mathews, *ib.*

Pardalotinus striatus rogersi Mathews, *ib.*, p. 258.

Pardalotinus striatus murchisoni Mathews, *ib.*

Pardalotinus striatus westraliensis Mathews, *ib.*

Pardalotinus striatus finkei Mathews, Austral Avian Record, Vol. II., pt. 5, p. 101, Sept. 24th, 1914: Running Creek, Fink River, Central Australia.

Pardalotus subaffinis S. A. White, Emu, Vol. XII., p. 263, 1913 (Kangaroo Island).

Pardalotus striatus finkei S. A. White, *ib.*, Vol. XIV., p. 190, 1915 (Central Australia).

DISTRIBUTION. Apparently all Extra-tropical Australia and Tasmania, reaching into the tropics at Mungi in the west and Port Denison in the east.

Adult male. Fore-part of head uniform black; hinder-crown and nape also black with white elongated centres to the feathers; sides of hinder-face similar but paler and the small white streaks more minute, a broad streak above the eye white; lores and feathers in front of the eye bright yellow; sides of neck, hind-neck, back, and scapulars ash-grey with a yellowish tinge on the last; rump and upper tail-coverts dull fawn colour; tail-feathers black irregularly margined with grey or white; lesser and median upper wing-coverts blackish, slightly tipped with buffy-white, the greater series and primary-coverts uniform black, the latter tipped with red; bastard-wing also black narrowly edged with white; flight-quills blackish-brown margined with white, more broadly towards the base of the primaries and inner secondaries and very slightly at the tips of the primaries, some of the outer secondaries margined with smoke-colour towards the base; cheeks, breast, and abdomen silky-white; throat and sides of abdomen lemon-yellow; sides of body, thighs, vent, and under tail-coverts buffy-white; axillaries and under wing-coverts white; under-surface of flight-quills greyish-brown with pale margins; lower aspect of tail blackish tipped with white. Eyes pale brown, bill very dark horn, feet and legs pale horn (flesh). Total length 98 mm.; culmen 7, wing 62, tail 31, tarsus 18. Figured. Collected at Nully Pool, East Murchison, Mid-west Australia, on the 18th of September, 1909, and is the type of *P. s. murchisoni*. (Left-hand bottom figure.)

Adult female. Similar to the male.

Adult female. Fore-part of head black, hinder-crown and nape also black with white shaft-streaks; ear-coverts similar but much paler; base of fore-head and loreal streak yellow; feathers in front of the eye dusky; cheeks and sides of hinder-crown whitish; sides of neck pale fawn-colour; mantle, back, and scapulars olive inclining to ochreous on the fringes of the last like the lower-back, rump, and upper tail-coverts; lesser and median upper wing-coverts bronze-brown with pale tips to some of the feathers; greater upper wing-coverts and bastard-wing black; primary-coverts also black tipped with red; flight-quills black on the outer aspect, fringed with white on some of the feathers and chestnut-brown on some of the others, inner-webs paler and margined with whitish; tail pale brown at the base becoming black on the apical portion which is tipped with white; throat and fore-neck yellow which gradually fades away on the breast and abdomen; sides of body, thighs, vent, and under tail-coverts pale fawn-colour; axillaries and under wing-coverts white; under-surface of flight-quills pale brown with whitish margins; lower aspect of tail similar to its upper-surface but paler. Total length 95 mm.; culmen 6, wing 65, tail 32, tarsus 19. Figured. Collected at Gracemere, Queensland, on the 17th of May, 1881, and is *P. queenslandicus* (subsp. n.). (Right-hand bottom figure.)

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Adult female. Top of head black streaked with white on the hinder-crown and nape; sides of face blackish minutely lined with white; lores and nasal bristles black; supraloral streak yellow, becoming white above the eye and on the sides of the crown; sides of neck, hind-neck, back, and scapulars greyish-olive, fringed with ochreous on the last; rump and upper tail-coverts ochreous; upper wing-coverts black, tipped with ochreous on the lesser and median series and with bright red on the primary-coverts; flight-quills blackish with white tips and white fringes to some of the feathers and chestnut-brown margins to some of the secondaries, inner-webs of flight-quills paler than the outer ones and margined with white; tail-feathers black tipped with white; chin and throat yellow, middle of breast and middle of abdomen silky-white; sides of breast, sides of body, thighs, and under tail-coverts pale buff like the axillaries; under wing-coverts and margins of flight-quill below white, remainder of quill-lining pale brown; lower aspect of tail similar to its upper-surface but rather paler. Total length 106 mm.; culmen 6, wing 65, tail 32, tarsus 20. Figured. Collected on the Nepean River, New South Wales, in May, 1885. (Right-hand top figure.)

Adult. Fore-part of head and feathers in front of eye uniform black; nape and hinder-face black narrowly streaked with white; loreal-streak yellow; a short streak of white on the sides of the crown; sides of neck, hind-neck, back, and scapulars dark lead-grey tinged with ochreous on the last; rump and upper tail-coverts ochreous-brown; lesser and median upper wing-coverts black tipped with ochreous-brown, the greater series uniform black; bastard-wing black, narrowly margined with white; primary-coverts also black tipped with pale yellow; flight-quills blackish margined and tipped with white, some of the secondaries partially edged with chestnut-brown; tail blackish tipped with white, more broadly on the outer feathers; chin, throat, and fore-neck yellow; sides of throat, middle of breast, and abdomen dull white; sides of breast and flanks drab-grey tinged with yellow; thighs dusky; vent and under tail-coverts buffy-white; axillaries greyish-white; under wing-coverts and base of quill-lining white, remainder of quills below glossy brown with pale margins; lower aspect of tail similar to the upper-surface but paler. Total length 100 mm.; culmen 7, wing 67, tail 35, tarsus 20. Figured. Collected at Blackwood, South Australia. And is the type of *P. s. subaffinis*.

Immature male. Crown of head olive-brown, some of the feathers black with white shaft-lines; hind-neck, sides of neck, back and scapulars olive-brown, becoming pale sepia-brown on the tips of the long scapulars, rump, and upper tail-coverts; wings blackish with white margins and pale tips to many of the feathers, some of the secondary-quills fringed with dark chestnut on the outer webs; primary-coverts tipped with red, lesser coverts similar to the back, inner-webs of flight-quills margined with whitish; tail-feathers blackish, more or less marked with white at the tips; lores and a line above the eye yellow—extending along the sides of the crown, where it becomes almost white; ear-coverts similar to the back; throat, lower cheeks, and breast lemon-yellow, middle of abdomen cream-white; sides of body and thighs ochreous; under tail-coverts pale fawn-colour; under wing-coverts cream-white dotted with pale brown; under-surface of flight-quills hair-brown with whitish edges; lower aspect of tail similar to its upper surface but paler. Bill greenish-black, eyes dirty green, feet and legs neutral tint. Collected at Bayswater, Victoria, on the 27th of March, 1909.

Immature male. Top of head, sides of neck, hind-neck, back, scapulars, and lesser upper wing-coverts olive-brown, slightly darker on the nape where there is one white feather with wide black margins; bastard-wing, greater-coverts, primary-coverts, and flight-quills blackish with pale margins and tips to many of the feathers and the primary-coverts tipped with red; tail-feathers blackish more or less marked with white at the tips; lores and a line above the eye whitish; sides of face, throat,

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and breast dull lemon-yellow; abdomen whitish; sides of body pale ochreous; thighs dusky; under tail-coverts pale buff; axillaries and under wing-coverts cream-white dotted with pale brown; under-surface of flight-quills hair-brown with cream-white margins; lower aspect of tail similar to its upper-surface. Bill greenish-black, eyes dirty green, feet pale neutral tint. Collected at Bayswater, Victoria, on the 27th of March, 1909.

Immature female. Crown of head, sides of neck, hind-neck, and upper-back olive-brown, the feathers on the head minutely fringed with blackish which imparts a scalloped appearance; scapulars, lower back, rump, and upper tail-coverts sepia-brown; wings blackish, lesser upper wing-coverts and median series tipped with olive-brown, bastard-wing fringed with white, primary-coverts tipped with red, some of the primary-quills fringed with umber-brown on the outer-webs and whitish towards the tips; tail-feathers blackish marked with white on the inner-webs at the tips; sides of face, sides of breast, and sides of body pale ochreous-brown; under tail-coverts pale buff; axillaries and under wing-coverts cream-white with pale brown dots on the margin of the wing; under-surface of flight-quills pale greyish-brown inclining to whitish on the margins; lower aspect of tail similar to its upper-surface but paler. Bill dark brown, gape cream, eyes grey, feet fleshy. Collected at Ringwood, Victoria, on the 9th of December, 1911.

Pardalotinus striatus striatus.

Eggs. Three to four eggs form the clutch, and sometimes five. A clutch of four taken at Berriedale, Glenorchy, Tasmania, on the 24th of October, 1896, is pure white. Round ovals in shape, shell fine and rather glossy. 19 mm. by 14.

Nest. Is usually placed in a small hollow or hole in a tree; it is a domed or covered over structure, and composed of grass, bark, and sometimes feathers. The nest is situated at heights varying from a few feet up to fully 50 feet above the ground. This species has been known to burrow into the bank of a creek, and construct a nest similar to *Pardalotus p. punctatus*, but it does not often happen.

Breeding-months. August to November.

Pardalotinus striatus ornatus.

Eggs. Three to four eggs form the clutch. A clutch of four taken at Port Hacking, New South Wales, on the 6th of September, 1903, is pure white. Swollen ovals in shape; shell fine, and very glossy. 16-17 mm. by 12.

Nest. Placed in a small hollow or hole in a tree, and similar to that of *P. s. striatus*.

Breeding-months. August to December.

Pardalotinus striatus substriatus.

Eggs. Clutch three to four, sometimes five. A clutch of five taken at Seaford, Victoria, on the 17th of November, 1918, is pure white. Swollen ovals in shape; shell fine and rather glossy. 17-18 mm. by 14.

Nest. A domed-shaped structure, composed of bark, grasses, and rootlets, and often lined with fine red bark. Placed in a hollowed-out and rounded chamber at the end of a tunnel, 12 to about 24 inches long, drilled into the perpendicular wall of a dam, creek, or road cutting, etc.

Breeding-months. August to November.

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Pardalotinus striatus assimilis.

Eggs. Three to four eggs form the clutch. Nest and eggs similar to those of *P. s. striatus*.

Breeding-months. August to December.

APPARENTLY this little "Manakin" was procured by Anderson on a Third Voyage of Captain Cook in Tasmania and was described from a specimen brought home. Latham gave no locality at first but corrected it almost at once upon referring to Anderson's papers. Gmelin overlooked the correction and as "Manakins" came from South America added that locality. This error misled Gould who differentiated between the Tasmanian and New South Wales birds, and his field-notes are the earliest I have noted.

Gould wrote: "This beautiful species, like the *P. punctatus*, enjoys an extensive range of habitat, being found in all parts of the southern portion of the Australian continent; it has not as yet been discovered in Tasmania, its place in that island being apparently occupied by the *P. affinis*. I have carefully examined specimens killed at Swan River with others from New South Wales, and I cannot find any difference either in their size or markings. It will be interesting to know how far this species and the *P. punctatus* extend their range northwards, a point which can only be ascertained when the country has been fully explored. This active little bird is generally seen seeking insects among the leaves, for which purpose it frequents trees of every description, but gives a decided preference to the *Eucalypti*. Its flight is rapid and darting, hence it passes from tree to tree, or from one part of the forest to another, with the greatest ease. Its voice is a double note several times repeated."

As I am regarding the three so-called species, *affinis*, *assimilis* and *ornatus*, as one species under the name *striatus*, and as my correspondents differ, I am quoting their notes in connection with the name they used.

Mr. Thos. P. Austin has written me from Cobbora, New South Wales: "*P. ornatus* is a very common bird throughout the whole district, and found in all sorts of timbered country, from almost open paddocks, with only a few dead trees remaining, to thick heavy ironbark scrubby ridges, and I have noted it feeding from the ground to the leafy tops of the tallest trees. It is a very tame and fearless species. I have often seen them come under my verandah to within a few feet of me, and examine every hole they could see from the floor to the ceiling searching for a nesting hollow. I fastened several cocoanut shells to the wall with a small round hole drilled into them, and although I often saw the birds enter them, they never used any for a nesting place. They nest in a great variety of situations, but mostly within hollow branches of dead trees, and in a small hole drilled into a perpendicular bank

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of a creek making a nesting chamber at the end which they line well with fine dry grass. When breeding they have a curious habit of holding their wings at right angles to the body. Several pairs of birds will at times gather in the nesting tree, often near the entrance to the nesting hollow, and go through this strange performance, sometimes quivering their wings with a fanning motion. I have only taken their eggs during the months of October and November, but I have little doubt they often breed earlier."

Mr. L. G. Chandler has sent a long and complete account under the name of *P. assimilis* from which I quote: "Is a numerous species in the Frankston district, Victoria; in open forest country you are certain to find it and often in the thickly timbered localities, but the birds show a preference for open gum country. One observer has recorded: 'The bird does not stay to winter in its breeding haunt, and is away long before sure signs of the coming fall are generally noticeable.' My observations have been the reverse. During the winter months I have seen flocks of a dozen or more birds at various times, and these in different localities. Like many other so-called migratory birds, this species leads a nomadic existence, their movements after the termination of the breeding season depending entirely upon food supply. At Bayswater in March, 1909, I saw a flock numbering many dozens. Two specimens I secured were immature birds just assuming the mature plumage. They would probably be about five months old. They were noisy and were giving a tri-syllabic note that resembled 'wit-e-lu.' I think it is the immature birds that give this call. In the month of April I have seen small companies at Frankston; in June at Olinda a noisy flock was seen traversing the tree-tops, but like many birds that are habitually noisy throughout the breeding season this species is remarkably quiet during the colder months of the year. This habit would make it easily overlooked by those who infer that the birds are migratory. In July and August I have not heard them give other than a sweet trill which, however, can be heard a fair distance away. This trill seems to be a call-note between the sexes. This species apparently congregate about February or March and in the months of July and August commence to pair off for the breeding season. Working actively from bough to bough in search of food they do not stop long in the one tree, but when two or three birds fly further afield the rest of the flock quickly follows. They appear to live on scale insects that frequent the gum leaves, and on a still calm day, if feeding in sapling growth, the tap, tap of their bills on the leaves can be plainly heard. The wing beats of this bird are rapid. At irregular intervals it describes a short quadrant in its flight. Sometimes this quadrant is a little more extended on a downward grade. This characteristic flight, together with certain notes that are uttered, render this species easily recognisable

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on the wing. Both sexes attend to the wants of the young ones, but before the site of the nest has been chosen and while building operations are in progress both birds are very noisy and thus help to betray the whereabouts of the nesting tunnel. Both sexes assist in the task of excavation, but I have only seen one bird carrying rootlets to the nest. The young when a few weeks from the nest have a pretty trill-like call unlike any note given by the adult bird. The young are hatched naked and blind, the body delicate pink, wings and feet pale cream and gape sulphur-yellow."

Mr. E. J. Christian has sent me: "*P. assimilis* leaves South Victoria for the winter, but stays here (North Victoria) all the year. Every water-course which has its clump of red gum has its pair of birds. The well-known cry 'Wilton, Wilton' can be incessantly heard, in fact, it gets monotonous. It is an extremely active little bird and hops along from twig to twig and bough to bough searching for food. They are very hard to notice and I have often stood beneath a tree trying to find where the noise came from and after some time have found the bird quite near my head. They are very trustful and I have had them within a couple of feet of my hand. They seem to eat many insects and larvæ which they find on the bark of the trees. I have often been amused at the way they pick at everything and dodge in and out of every hole."

Mr. Tom Tregellas has written: "As a destroyer of insect pests *Pardalotes* are invaluable, fluttering in and out, amongst, under and over the bushes, scanning every nook and corner in search of food. Much is taken whilst fluttering at the end of a bough with rapidly moving wings and body poised, their little beady eyes prying everywhere. This peculiar habit is entertaining to watch. They seem able to poise the body in any position, and while thus poised the head and neck are twisted to all points and the undersides of the leaves scanned as well as the tops. The food they partake of is almost shunned by other birds, consisting of aphids and all kinds of blight and fungus growths which work incalculable harm. *P. assimilis* has never a dread of man and while nesting is absolutely fearless, going and coming even when one is sitting alongside the nesting burrow. I have frequently caught the bird under such conditions, which showed so little concern at its capture that it never even tried to escape, and when released hopped on to the nearest twig and began to preen its feathers. The other variety, *ornatus*, common in our district, varies so little in its nesting and other habits that the one description does for both species. During the nesting season they are wont to sit on the top-most twigs of the tallest trees, expanding and contracting their small rounded wings in a very methodical manner, uttering the while those peculiar notes that give the bird the name of 'Wittoo' or 'Witlow.' I found that *assimilis*

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uttered a nesting call resembling 'You *did*, tyou *did*,' with the accent hard on the last syllable. This call is repeated many times as if to clinch an argument, and is used principally when the hen bird is sitting."

Mr. F. E. Howe wrote: "*P. ornatus* is one of the commonest birds in the Mallee and as many as three nests were noticed in one tree at Pine Plains during Sept., 1907. At Kow Plains we found many nests containing eggs and young. Both male and female help to build the nest. At Ringwood *P. assimilis* occurs, *P. ornatus* being only seen occasionally."

Mr. A. G. Campbell's notes read: "*Pardalotus ornatus* arrives in North-east Victoria each year before the end of August, staying during the breeding season and leaving again in April. It usually nests in hollows of trees, but on the sandy banks of the Murray near Wahgumgah some tunnel their nesting holes. *Pardalotus assimilis* in Victoria only occurs south of the Dividing Range and then only east of the longitude of Melbourne. *P. ornatus* occurs throughout the remaining three-quarters of the State. Both species are semi-migratory, leaving for the winter."

Of Kangaroo Island, A. G. Campbell wrote: "On the scrub-covered moorlands a few very stunted gum trees were found, some of them not more than six feet in height. They were covered with grotesque galls and insect ridden. In nearly every patch one of these little birds could be disturbed. It differs somewhat from Victorian specimens in markings. Those from the north-east of the State are much richer than those from the north-west. They have the lower back and rump rufous instead of olive, and further have the tops of all the primaries white. The Kangaroo Island specimens have one character of each. They are olive coloured in the mantle like the birds from North-west Victoria, but have all the tips of the primaries white, like the north-eastern forms."

Captain S. A. White writes: "*P. striatus* is a bird with a great range and there is little apparent variation from Queensland to Western Australia, and I have met with it all over Central Australia. The note is distinctive and is a double note repeated quickly. A very lively bird, hopping about amongst the gum foliage in a very sprightly manner and its flights straight and rapid. The nest is placed in dead limbs and lined with dry grass; some of the nests are very neatly and compactly made."

Mr. Edwin Ashby has written me: "I have four specimens, three collected by myself and the other exchanged, of the form we have always referred to as *assimilis*, with the white outer web of the third primary only. They were collected, one at Adaminaby, near the Snowy Mountains, Southern New South Wales; one from the Macanally Range further north, one from Emmaville in the high New England country near the Queensland border

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in New South Wales, and the other exchanged from Somerville. I have never taken this form in any of the other states. I also have two specimens from New South Wales in which the third, fourth, fifth, sixth and seventh primaries have the outer web white as in the South Australian specimens. This suggests that there are two very distinct subspecies in New South Wales. I noticed that the note of the bird I shot at Adaminaby was quite distinct from that of the South Australian and Victorian birds."

D'Ombra has recently recorded from The Watercourse, North-west New South Wales: "Pardalotes, both red-tipped (*P. striatus*) and orange-tipped (*P. assimilis*) are fairly plentiful. Their notes were exactly alike, but entirely different from the similar species of more southern latitudes. The note is 'Chip-chip,' not 'wit-ee-chu,' as uttered by the red-tipped elsewhere. In examining specimens of each we noticed that the white outer edge and tip was missing in the second primary feather of the orange-tipped, while there was only a faint trace of white towards the final third of the similar feather in the red-tipped. We do not think this has been recorded before, although Dr. W. Macgillivray (Broken Hill) mentions the unequal amount and distribution of the white margins in the specimens around Coleraine (Vic.). These birds, with the same notes, showed (a) red tips, (b) reddish-orange tips. Probably they are *assimilis* showing the range of colour in the tips as described by Hall in his 'Handbook.' Their nests here are always in trees, and they are never known to breed in tunnels in banks. The writer of this article found the red-tipped breeding both in the trees and banks on the Snowy River, near Jindabyne (N.S.W.)."

Captain S. A. White, writing of the Birds of Eyre Peninsula, South Australia, observed: "*Pardalotus ornatus* was also plentiful. They seemed to keep to the big gum country, and were found constructing their beautifully formed nests of soft bark and grass in the hollow of a gum limb or bole, a hole with a very small entrance being always chosen."

Previously Hall had noted from the same locality: "Specimens showed an orange speculum. Years ago, in Western Australia, I secured a skin with a yellow speculum. This, in my mind, makes *P. ornatus* variable in speculum, being scarlet, orange or yellow."

Capt. S. A. White, writing of a Trip to the Northern End of Flinders Range, South Australia, recorded the South Australian Pardalote as "Common. Found only along the gum-tree creeks. Resembles the Central form, *P. s. finkei* (Mathews) very much, but differs in having a darker upper-surface and less buff on the rump." Later, reporting from Lake Victoria and Murray River: "Found all through the district visited. At Lake Victoria they had assembled in numbers, and had made their nesting-tunnels into the bank

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of a washout. Upon comparison it is found that the Murray bird is much darker than the northern bird (true *Pardalotinus striatus ornatus*), and the tips of the spurious wing-feathers are orange, while those of the northern bird are crimson."

Mr. Tom Carter has written me: "The Westralian Pardalote (*P. striatus westraliensis*) is a common bird throughout the south-west of West Australia. Nests containing eggs were never found, but on Dec. 29th, 1911, I watched the parent birds feeding young birds in the nest, which was built inside a knot-hole, on the trunk of a dead Blue Gum-tree near Albany, which stood on the edge of a running brook. The hole was about fifteen feet above the ground. Dec. 11th, 1902. Young birds were noted in a nest in a tree hanging over Vasse River about twenty feet above the water."

Milligan wrote about the Margaret River district, South-west Australia: "Not many of these birds were observed, and those that were appeared to confine themselves to the 'red-gum' country. I observed a pair passing in and out of a small hole of a red gum-tree, in which they evidently were nesting." From the Stirling Ranges he added: "Common in the 'white-gum' country. One of my perplexities was in regard to *Pardalotus ornatus*. At several places in the 'marlock' clumps we obtained specimens, each of which possessed orange-yellow head spots. Usually spots of that colour are taken as an external distinguishing sex mark, but it could be scarcely possible that every bird we shot should prove to be of the same sex."

Alexander, reporting upon the Birds of Bremer Bay, recorded: "Seen several times, but the individuals were very pale in colour, and seemed to me to belong to a different race from those found near Perth. They may, however, have been young birds." Of Perth, Alexander wrote: "Resident. A plentiful species throughout the district."

Ashby recorded it as "common at Claremont and Watheroo," while Captain S. A. White, who visited the Margaret River district, concluded: "This bird is identical with the South Australian bird. The writer fails to see the slightest variation," but did not say with what locality South Australian birds he compared them.

Gould wrote: "*P. affinis* is distributed over every part of Tasmania, and may be regarded as the commonest bird of the island; wherever the gum and wattle exist, there also may the bird as certainly be found; giving no decided preference to trees of a high or low growth, but inhabiting alike the sapling and those which have attained their greatest altitude. It displays great activity among the branches, clinging and creeping about in the most easy and elegant manner, examining both the upper and under sides of the leaves with the utmost care in search of insects. It is equally common in all the gardens and shrubs, even those in the midst of the towns, forming a

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familiar and pleasing object, and enlivening the scenery with its sprightly actions and piping, though somewhat monotonous, note. Its food consists of seeds, buds, and insects, in procuring which its most elegant actions are brought into play. I was formerly led to believe that the Allied Diamond-Bird was strictly confined to Tasmania and the islands in Bass's Straits, but I have lately seen specimens from Victoria and New South Wales."

Mr. Frank Littler has written me: "Very plentiful in places, may be seen flitting about the scrub in small flocks. May be found in both scrubby and open country throughout Tasmania."

Mellor and White record it from Flinders Island as: "Numerous. Met with in the big timber and scrub country alike."

A. G. Campbell included it in his list of the Birds of King Island and also that he had shot a specimen in Victoria, thus confirming Gould's record above quoted.

Mr. J. P. Rogers wrote: "At Mungi the two northern species (*P. uropygialis* and *P. rubricatus*) were replaced by two others, one a form of *P. rubricatus* and one of the group with white streaks on the hinder crown. This new bird has similar habits to *P. rubricatus*, only the note is much shorter and sharper than that of the other two species. It is not very numerous and I had difficulty in distinguishing it from *P. rubricatus* in the field unless I got very close up; this is the first time I have seen this species." The most northern record of *P. striatus* is Mungi.

Gmelin described *Pipra striata* as follows:

"*P. subtus* flavescens, capite superiore nuchaque nigris, singulis pennis per longitudinem stria alba notatis, remigibus atris; tertia brevissima.

"Striped-headed Manakin. Lath. syn. II. 2, p. 526, n. 11, t. 54. Habitat in America australi.

"Longitudo $4\frac{1}{2}$ pollicum; rostrum fuscum; inter hoc et oculos macula flava; cervix et dorsum ex fuscescente cinerea; tectrices alarum fuscescentes, nonnullae apice flavae; alae spuriae apice albae; cauda nigra perbrevis; rectricibus lateralibus apice albis; pedes atri."

This is merely a Latin rendering of Latham's description which reads: "Length four inches and a half. Bill brown; crown of the head and nape black, with a stripe of white down the shaft of each feather; hind part of the neck and back of a brownish ash colour, inclining to olive near the rump; between the bill and eye a deep yellow spot; the wing-coverts are brownish; the bastard wings tipped with white, and some of the outer coverts tipped with yellow, making an oblique mark near the outer edge of the wing; the quills dusky; the third shorter in proportion than any of the others, being a quarter of an inch shorter than the second, though all the others are of the usual length (this is a characteristic, as I observed it in both wings); the

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under-parts of the bird are yellowish, growing very pale near the vent; under tail-coverts are buff-colour; the tail black, very short; the outer feather tipped with white; legs dusky.

"This is in the possession of Sir *Joseph Banks*."

I have reproduced these descriptions because Gould used *striatus* as of Temminck for the New South Wales form and rejected Gmelin's name as to the Tasmanian form, which he had named *Pardalotus affinis*, citing in his synonymy:

- "*Pipra striata* (?) Gmel. et Auct.

"Striped-headed Manakin, Shaw, Gen. Zool., Vol. X., p. 29, pl. 4," and observing:

"The *Pardalotus affinis* is distinguished by the yellow tips of its spurious wings, and by the margin of the third primary only being white. The bird figured by Shaw and Latham, as quoted above, has, in all probability, reference to the present species, but not, in my opinion, to the *Pipra striata* of Gmelin, whose description does not agree with the Tasmanian bird, or with any of those from New South Wales; he distinctly states that the tips of some of the wing-coverts are yellow, and that the spurious wing is tipped with white, and, moreover, adds that it is a native of South America."

Gmelin's description as pointed out is simply a translation of Latham's which Gould admits might be referable, and the locality given by Gmelin is purely supposititious as my quotations show.

This was rectified by Latham himself in the *First Supplement to the General Synopsis of Birds*, 1787, p. 188, where he wrote: "I have been hitherto at a loss for the native place of this bird. Mr. Anderson's papers inform me that it is a native of Van Diemen's Land. I think it not an improbable supposition, that the Brown Shrike (*Gen. Synops. Birds*, Vol. I., p. 191) may be the other sex of this species."

As the Brown Shrike was described from a specimen in the British Museum, and Latham's account was latinised by Gmelin as *Lanius fuscus*, which is earlier than any other Pardalote name, I reprint Latham's account: "Size of a Manakin. Bill horn-colour, with a black tip; the upper parts of the plumage brown, beneath white; between the bill and the eye yellowish; secondaries tipped with yellowish, and the edges of the greater quills of the same colour, forming two narrow bars on the wings; legs black. Place unknown." As Latham drew up this account from a specimen itself his opinion must be considered, but it does not seem applicable to a Pardalote, the two yellow wing-bars being foreign to the group.

The next complication after Gould's *affinis* appeared when Ramsay drew up his "List" in 1878, when he included *Pardalotus striatus, affinis*

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and *assimilis* Ramsay, characterising the last named in a footnote reading: "Tips of spurious wings always orange-red, never yellow as in *P. affinis*," and starring the range columns under "Port Denison, Wide Bay District, Richmond and Clarence River Districts, New South Wales and Interior." At a later meeting of the Linnean Society of New South Wales he exhibited examples recording that it was found "breeding in New South Wales in large numbers." According to this the type locality would be New South Wales, as he was simply naming the bird with red tips but with the margin of third primary only white.

Hall then pursued the matter of these three "species" and suggested that as birds like "*assimilis*" were found in Victoria and were intermediate in their characters between the New South Wales "*ornatus*" and the Tasmanian "*affinis*," the three were all forms of one species.

This view was discussed without much definite conclusions, so that in 1912 I carefully criticised the whole of the available material, and in my "Reference List" stated my conclusions thus: "After the examination of long series of *Pardalotes* I have been compelled to ignore the white edgings to the primaries and the coloration of the tips of the coverts, as I consider them of no primary importance, as specimens from localities adjacent gave different results. I could only conclude that we had three species living in the same locality and differing only in the most minute manner, and many subspecies of each one; or by elimination conclude that one species only existed, with eight (or nine) subspecies. I chose the latter alternative, and have based my diagnosis upon general coloration alone, leaving out of consideration altogether the coloration of the tips of the coverts. I may here remark, however, that *P. s. striatus* seems to have constantly *yellow* tips to the coverts, *P. s. assimilis* mainly orange, though throughout New South Wales, South Australia, and Victoria this colour may be rarely found; while in West Australia I have not yet seen any other colour than red."

The subspecies admitted were

Pardalotus striatus striatus (Gmelin).

Tasmania.

Pardalotus striatus kingi Mathews.

"Differs from *P. s. striatus* in being uniform grey above. King Island."

King Island, Bass Straits.

Pardalotus striatus assimilis Ramsay.

Queensland.

Pardalotus striatus ornatus Temminck and Laugier.

New South Wales.

Pardalotus striatus substriatus Mathews.

STRIATED PARDALOTE.

"Differs from *P. s. ornatus* in its paler coloration above, especially on the rump. (Ultima) Victoria."

Victoria.

Pardalotus striatus subaffinis Mathews.

"Differs from *P. s. ornatus* in its darker grey on the back and paler rump, forming a contrast, thus differing from *P. s. substriatus*. (Blackwood) South Australia."

South Australia.

Pardalotus striatus murchisoni Mathews.

"The most pallid form, paler than *P. s. rogersi*, the flank coloration being very pale and the yellow also very pale. (Nully Pool) Murchison, West Australia."

Mid-west Australia.

Pardalotus striatus westraliensis Mathews.

"Differs from *P. s. ornatus* in its darker coloration above, the back being browner and the rump more buffy. (Claremont) West Australia."

South-west Australia.

Pardalotus striatus rogersi Mathews.

"A pale form, differing from *P. s. westraliensis* in the head and back coloration as also on the rump, and from *P. s. substriatus* in being still paler. Mungi, North-west Australia."

Interior North-west Australia.

These were admitted in my 1913 "List" with their transference to the genus *Pardalotinus* and I have since added

Pardalotinus striatus finki.

"Differs from *P. s. subaffinis* in having the head more streaked, rump brownish, and the centre of the throat yellowish. Running Water, Fink River."

Central Australia.

Of this form Captain S. A. White wrote; "The only variation from the southern bird is that the red tip is much brighter and deeper, the rump and upper tail-coverts being a rich and deeper buff. An immature bird was secured at Hamilton Bore. . . . is remarkable in having the bright-red tips, primaries marked strongly with white, lores bright yellow; yet no signs of striation appear upon its head, which is of a light-grey colour, same as back."

All these forms can still be admitted with the substitution of *queenslandicus* for *assimilis*, and the Kangaroo Island bird can be called *Pardalotinus striatus campbelli* subsp. n. differentiated in the body of the work (p. 203).

PARDALOTINUS MELANOCEPHALUS.

BLACK-HEADED PARDALOTE.

(PLATE 509.)*

PARDALOTUS MELANOCEPHALUS Gould, Synops. Birds Austr., pt. iv., pl. (62), April 1st, 1838: Moreton Bay, Queensland.

Pardalotus melanocephalus Gould, Synops. Birds Austr., pt. iv., 1838; *id.*, Proc. Zool. Soc. (Lond.), 1837, p. 149, Dec. 1838; *id.*, Birds Austr., pt. xxiii. (Vol. II., pl. 40), June 1st, 1846; *id.*, Handb. Birds Austr., Vol. I., p. 165, 1865; Ramsay, Proc. Zool. Soc. (Lond.), 1875, p. 584; *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 180, 1878; Sharpe, Cat. Birds Brit. Mus., Vol. X., p. 60, 1885; Ramsay, Tab. List Austr. Birds, p. 4, 1888; Hall, Key Birds Austr., p. 46, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 447, 1901; Wobb, Emu, Vol. II., p. 29, 1902 (N.Q.); Le Souëf, *ib.*, p. 92 (N.T.); House, *ib.*, p. 115 (N.W.A.); Barnard, *ib.*, Vol. III., p. 186, 1904 (N.Q.); Berney, *ib.*, Vol. V., p. 76, 1905 (N.Q.); *id.*, *ib.*, Vol. VII., pp. 80-1, 1907 (Food); North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 231, 1907; Mathews, Handl. Birds Austral., p. 91, 1908; A. G. Campbell, Emu, Vol. IX., p. 22, 1909 (Review); Broadbent, *ib.*, Vol. X., p. 235, 1910 (N.Q.); Cleland, *ib.*, Vol. XII., p. 15, 1912 (Food); Campbell and Barnard, *ib.*, Vol. XVII., p. 30, 1917 (N.Q.); S. A. White, *ib.*, Vol. XIX., p. 225, 1920 (Q.).

Pardalotus uropygialis Gould, Proc. Zool. Soc. (Lond.), 1839, p. 143, March 1840: "N.W. Coast Australia," *i.e.*, Port Essington, Northern Territory; *id.*, Birds Austr., pt. i. (Vol. II., pl. 41), Dec. 1st, 1840; *id.*, Handb. Birds Austr., Vol. I., p. 166, 1865; Ramsay, Proc. Zool. Soc. (Lond.), 1877, p. 350 (Q.); *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 180, 1878; Sharpe, Cat. Birds Brit. Mus., Vol. X., p. 62, 1885; Ramsay, Proc. Linn. Soc. N.S.W., Ser. 2, Vol. I., 1886, p. 1,087, 1887 (N.W.A.); *id.*, Tab. List Austr. Birds, p. 4, 1888; Hall, Key Birds Austr., p. 46, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 448, 1901; Hall, Emu, Vol. II., p. 54, 1902 (N.W.A.); North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 232, 1907; Mathews, Handl. Birds Austral., p. 91, 1908; Whitlock, Emu, Vol. VIII., p. 185, 1909 (W.A.); Mathews, *ib.*, Vol. IX., pp. 13-62, 1909 (N.W.A.); A. G. Campbell, *ib.*, p. 22 (Review); G. F. Hill, *ib.*, Vol. X., p. 283, 1911 (N.W.A.); Macgillivray, *ib.*, Vol. XIII., p. 176, 1914 (N.Q.); Barnard, *ib.*, p. 209 (N.Q.); *id.*, *ib.*, Vol. XIV., p. 48 (N.T.); H. L. White, *ib.*, Vol. XVI., p. 226, 1917 (N.T.); Macgillivray, *ib.*, Vol. XVII., p. 203, 1918 (N.Q.); Campbell, *ib.*, Vol. XVIII., p. 185, 1919 (N.T.).

* This Plate is lettered *Pardalotus melanocephalus*.



H. Grönvold, del.

Witherby & Co.

PARDALOTUS MELANOCEPHALUS.
(BLACK-HEADED PARDALOTE).

PARDALOTUS RUBRICATUS.
(RED-BROWED PARDALOTE).

NATIONAL MUSEUM MELBOURNE

BLACK-HEADED PARDALOTE.

- Pardalotus melanocephalus melanocephalus* Mathews, Nov. Zool., Vol. XVIII., p. 390, 1912; *id.*, List Birds Austr., p. 256, 1913.
- Pardalotus melanocephalus uropygialis* Mathews, Nov. Zool., Vol. XVIII., p. 390, 1912; *id.*, List Birds Austr., p. 256, 1913.
- Pardalotus melanocephalus inexpectatus* Mathews, Nov. Zool., Vol. XVIII., p. 390, Jan. 31st, 1912: Parry's Creek, North-west Australia; *id.*, Austral Av. Rec., Vol. I., p. 61, 1912; *id.*, List Birds Austr., p. 257, 1913.
- Pardalotus melanocephalus melvillensis* Mathews, Austral Avian Record, Vol. I., pt. 2, p. 48, April 2nd, 1912: Melville Island, Northern Territory; *id.*, List Birds Austr., p. 256, 1913.
- Pardalotus melanocephalus barroni* Mathews, Austral Avian Record, Vol. I., pt. 4, p. 96, Sept. 18th, 1912: Cairns, Queensland; *id.*, List Birds Austr., p. 256, 1913.
- Pardalotus melanocephalus tormenti* Mathews, Austral Avian Record, Vol. I., pt. 4, p. 96, Sept. 18th, 1912: Point Torment, North-west Australia; *id.*, List Birds Austr., p. 257, 1913.
- Pardalotus melanocephalus sedani* Mathews, Austral Avian Record, Vol. II., pt. 4, p. 77, Dec. 29th, 1913: Cloncurry River, Mid-Queensland.
- Pardalotus rubricatus uropygialis* (error only) Campbell, Emu, Vol. XXI., p. 194, 1922 (N.T.).
- Pardalotinus melanocephalus pilbarra* Mathews, Austral Av. Record, Vol. V., pts. 2-3, p. 36, Feb. 21st, 1923: Pilbarra Goldfields, Mid-west Australia.

DISTRIBUTION. Across Northern Australia from Coongan River in the lower North-west through Northern Territory to Cairns and Moreton Bay; Queensland.

Adult male. Top of head, nape, a narrow line from the lores to the eye, and ear-coverts black; supraloral streak rich orange; a superciliary streak which extends along the sides of the crown white; mantle and back olive-grey; scapulars ochreous; rump and upper tail-coverts orange-yellow; upper wing-coverts glossy-black; outer edge of wing white including the bastard-wing; tips of primary-coverts deep red; flight-quills black, becoming paler towards the tips, fringed with white both on the outer and inner webs of most of the feathers; tail black, broadly tipped with white; chin, throat, and middle of breast yellow; cheeks and sides of throat cream-white becoming buff on the sides of the breast; abdomen white; sides of body ochreous-yellow becoming buff on the flanks and under tail-coverts; axillaries and under wing-coverts pale buff; under-surface of flight-quills hair-brown with white margins; lower aspect of tail similar to its upper-surface but paler. Eyes olive, bill black, legs pale brown. Total length 97 mm.; culmen 7, wing 58, tail 28, tarsus 20. Figured. Collected at Cape York, North Queensland, on the 16th of April, 1911.

Adult female from the same locality similar to the male.

Adult female. Fore-head, crown of head, nape, loral-streak, and ear-coverts black; supraloral streak orange; cheeks and superciliary streak, which extends along the sides of the crown, white; hind-neck, sides of neck, and back olive-grey; scapulars, rump, and upper tail-coverts dark ochreous, becoming somewhat paler on the long feathers of the latter; upper wing-coverts black; outer edge of wing and margin of bastard-wing white; tips of primary-coverts deep red; flight-quills black margined

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with white at the tips and on the outer and inner webs of the primaries and some of the inner secondaries; tail black tipped with white—much more broadly on the outer feathers; throat, breast, and sides of abdomen yellow; middle of breast and middle of abdomen inclining to white; sides of body ochreous; under tail-coverts buffy-white like the axillaries; under wing-coverts white; under-surface of flight-quills greyish-brown margined with white; lower aspect of tail similar to its upper-surface but paler. Total length 100 mm.; culmen 8, wing 63, tail 30, tarsus 19. Figured. Collected at Gracemere, Mid-Queensland, on the 23rd of May, 1881.

Adult male from the same locality similar to the female.

Immature. Crown of head and nape greyish-brown with pale tips to the feathers, which gives a scalloped appearance; back and scapulars yellowish-olive; rump and upper tail-coverts ochreous-yellow; wings blackish, more or less glossy on the outer-webs of the greater coverts, primary-coverts tipped with dark red; bastard-wing and flight-quills margined with white on both webs, except on the outer-webs of the two outer-quills; tail blackish, paler at the base and whitish at the tips; lores and a line over the eye yellow; throat, breast, and abdomen pale yellow, darker and inclining to buff on the flanks, thighs, and under tail-coverts; axillaries, under wing-coverts, and inner edges of quills below cream-white, remainder of quill-lining hair-brown; lower aspect of tail similar to its upper-surface but paler. Bill dark horn, lower whitish, eyes and legs french-grey. Collected at Napier Broome Bay, North-west Australia, on the 20th of October, 1910.

Immature. Crown of head, hind-neck and back ochreous-grey, becoming paler and inclining to buff on the scapulars and yellowish on the rump and upper tail-coverts; wings black with white margins to the bastard-wing and flight-quills—both on the outer and inner-webs of the latter, primary-coverts tipped with dark red; tail-feathers blackish with white, or greyish-white tips; lores, eye-brow, sides of face, throat, breast, and middle of abdomen cream-white tinged with yellow; sides of body, thighs, and under tail-coverts inclining to buff; axillaries, under wing-coverts and inner-margins of quills below white, remainder of the quill-lining hair-brown; lower aspect of tail similar to its upper-surface. Bill brown, base white, eyes greyish-brown, legs and feet leaden-grey. Collected on Parry's Creek, North-west Australia, on the 12th of September, 1908.

Nestling. Crown of head, hind-neck, and mantle dark ochreous, becoming cinnamon-buff on the lower-back, rump, and upper tail-coverts; upper wing-coverts and flight-quills blackish with silvery-grey sheaths and whitish tips to the latter, some of the primary-coverts tipped with dark red; tail blackish with grey, or whitish margins to the feathers; throat, breast, and abdomen yellow; sides of body, thighs, and under tail-coverts fawn-colour; under-surface of flight-quills similar to their upper-surface; lower aspect of tail similar to its upper-surface. Bill brown, corner of mouth white, eyes very pale brown; feet and legs leaden-grey. Collected on Parry's Creek, North-west Australia, on the 6th of September, 1908.

Pardalotus melanocephalus melanocephalus.

Eggs. Three to four eggs form a clutch, usually four. A clutch of four taken at South Grafton, Clarence River, New South Wales, on the 17th of August, 1897, is pure white. Swollen ovals in shape; shell fine and slightly glossy. 18–19 mm. by 13.

Nest. Similar to that of *P. p. punctatus*, and placed in like situations (at end of tunnel).

Breeding-months. August to December.

BLACK-HEADED PARDALOTE.

Pardalotus melanocephalus barroni. NORTHERN BLACK-HEADED PARDALOTE.

Eggs. Four eggs form the clutch. A clutch of four taken at the Murray River, Cardwell, North Queensland, on the 23rd of September, 1916, is pure white. Very rounded ovals in shape; shell fine and slightly glossy. 17 mm. by 13.

Nest. Similar to that of *P. p. punctatus*, and placed in like situations (at end of tunnel).

Breeding-months. June to December. (April.)

Pardalotus melanocephalus uropygialis.

Eggs. Three to four for a sitting, usually three. A clutch of three eggs taken at Borroloola, Macarthur River, Northern Territory, on the 12th of June, 1913, is pure white. Very round in shape; shell fine, and almost devoid of gloss. 15-16 mm. by 13.

Nest. Similar to that of *P. p. punctatus*, and *P. m. melanocephalus*, and placed in like situations (at end of tunnel).

Breeding-months. June to November.

THOUGH Gould described this species he never saw it alive himself and recorded nothing regarding its habits.

Writing of the birds of North-east Queensland, chiefly Rockingham Bay, Ramsay stated: "Perhaps the most common species. It resorts to the topmost leafy twigs, where it secures its food of insects and their larvæ."

Berney, writing from the Richmond District, North Queensland, noted: "A very common Pardalote here. Its monotonous 'Chuc, chuc,' is heard all day long on the river. A nest containing two eggs was found in a sandbank on 27th June, 1903."

Webb, from the Herbert River, observed "On 30th of April last, while walking close to the edge of a shallow, open wall in sandy soil, I disturbed a Pardalote (*P. melanocephalus*) from its nest. On digging the nest out I found two eggs, both considerably incubated. Surely April is a curious time to breed."

Campbell and Barnard added very little when they wrote about the Birds of Rockingham Bay, merely stating "These familiar birds were everywhere. In the sides of watercourses (dry or otherwise) in some localities their burrows were almost every few yards, but did not always contain eggs. Some of the burrows had the appearance of having been rifled by reptiles. Further south, at Mackay, these Pardalotes were nesting during July."

In this case they did not even discuss the subspecific variation, as the Cairns' bird has an orange-yellow rump, while Gould described his *P. melanocephalus*, the name they used, as having "the upper tail-coverts brownish-buff," and distinguished his *P. uropygialis* on account of the "bright yellow colouring of the lower part of the back."

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Captain S. A. White recorded from Stradbroke Island, South Queensland, "*Pardalotus melanocephalus*. These little birds were fairly plentiful, and their call would be heard all day long. Dr. D'Ombraïn writes: "Lores rather different from type—i.e., smaller and not so marked in hue. One of my skins was an adult female."

Gould described as a distinct species the western form of this somewhat variable species, and consequently ever since there has been misunderstanding as to the forms met with. Thus, Mr. J. P. Rogers' notes read: "At Marngle Creek this species (*P. uropygialis*) was not numerous, but the call being louder they were more noticeable than *P. rubricatus*, which, I should say, is more numerous." From Melville Island Mr. Rogers wrote: "Cooper's Camp, Nov. 20th, 1911. This species is rather rare here and is usually found in forest country, but is sometimes seen in low bushes on the foreshore. Dec. 15th, 1911. Is not numerous, but now some are seen every day. Jan. 13th, 1912. 10 miles S.E. of Snake Bay. Very few were seen and those only in the paper-bark trees on the edge of the great swamp. Jan. 29th, 1912. Cooper's Camp. Seems to be much more numerous here now."

Hall has recorded Rogers' previous notes from the Fitzroy River, solely about the nests and eggs, but Hall observed about the birds: "The rump colouring agrees with the text of Gould, but not the figure (of *P. uropygialis*), which is much more highly and brightly coloured. The bill of this specimen is also much larger than those referred to by Gould."

Whitlock, writing of the Birds on the Pilbarra Goldfield, noted: "*P. uropygialis*. Rare. I only identified this Pardalote after some trouble, and in one particular creek. There were two pairs present. I had the opportunity on one occasion of shooting a pair, but refrained, as I wanted the nest. I did not have the chance again, but I found the nest. It was similar in construction to that of *P. rubricatus* and, like that, placed at the end of a tunnel some 20 inches deep. The eggs were smaller and more glossy, however, than those of the latter species."

It is a pity Whitlock did not get the birds as this appears to be the most south-west record, and in view of the geographical variation observed in this species, they would have proved an interesting study.

Hill reporting upon the birds of Kimberley, North-west Australia, wrote: "*P. uropygialis*. Although some birds remained in the district throughout the ten months I was there, it was not until the middle of March that they became numerous. The nesting season commenced at the end of April, and was at its height at the end of July. Most of the nesting burrows, which vary in length from 18 inches to 2 feet, were made in the sides of holes dug in the sandy soil by pigs in search of roots; others were made in the banks of

BLACK-HEADED PARDALOTE.

creeks and watereourses. Under favourable conditions, nine days are occupied from the commencement of the burrow to the completion of the nest. The egg-chamber is invariably lined with coarse pieces of eucalypt bark. Two eggs are laid. Small insects gathered from the flowers of a *Grevillea* and eucalypts form the principal article of food, in collecting which the feathers of the throat and fore-head frequently become matted with honey and pollen. Lizards are responsible for the destruction of many nests."

Macgillivray recorded it as "Numerous in the Gulf country and at the Jardine River," using the name *P. uropygialis*.

Campbell wrote of birds from the King River, Northern Territory: "One ♂, one ♀, one immature. There appears to be some uncertainty whether the Gouldian type-locality of this interesting species is Arnhem Land or North-west Australia. Gould, in his letterpress, states the latter locality, while his fine plate undoubtedly depicts birds from Port Essington. In the Territory specimens the lower back and upper tail-coverts are not 'chestnut,' but are more golden (cadmium-yellow), while the north-west birds have those parts light cadmium, and the flanks and under tail-coverts are paler buff." A little later, writing of the birds of Groote Eylandt, Campbell, through a slip of the pen, wrote "*Pardalotus rubricatus uropygialis*," adding ♂ ♀ ♀. "These specimens possess the golden (cadmium-yellow) upper tail-coverts typical of N.T. birds."

I don't quite understand the reference to "chestnut" above in connection with the subspecies *uropygialis*.

This distinct species shows definite variability geographically as can be recognised from the fact that the Western form was regarded as specifically distinct by Gould. He described the typical form from Moreton Bay, Queensland, and reserving specimens from North-west Australia named them as distinct. Gould's comparisons are worthy of quotation: "*P. melanocephalus* probably takes the place (at Moreton Bay) of the *P. striatus*, from which it is distinguished by the black colouring of its head and by its thicker bill, but to which it is very nearly allied, as well as to the *P. uropygialis*; it is, in fact, directly intermediate between the two, having the black head of the latter without the yellow colouring of the rump. . . *P. uropygialis* is easily distinguished by the bright yellow colouring of the lower part of the back, by the rich spots of orange before the eye and by being more diminutive in size."

Ramsay, recording the bird from Derby, wrote: "Several specimens of this well marked species; the sexes are alike in plumage. The young have the head mottled with brown, and the tips of the spurious wing-feathers of the same red tint as in the adult, the upper tail-coverts not so bright, but still

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brighter in tint than in the adult of *P. melanocephalus*, which this species resembles."

From Rockingham Bay, Queensland, Ramsay had stated that *P. melanocephalus* was common, but from the Ethridge River, Queensland, he added *P. uropygialis*.

When I drew up my "Reference List" I concluded that *P. uropygialis* was only subspecifically distinct, the chief difference being the brighter colouring of the rump. I also separated the Western form into two: thus

Pardalotus melanocephalus melanocephalus Gould.

South Queensland, New South Wales.

Pardalotus melanocephalus uropygialis Gould.

North-west Australia (Derby).

Pardalotus melanocephalus inexpectatus Mathews.

"Differs from *P. m. uropygialis* in being darker above. Parry's Creek, North-west Australia."

North-west Australia, Northern Territory.

Melville Island birds were then received and were seen to differ, so that I named

Pardalotus melanocephalus melvillensis.

"Differs from *P. m. inexpectatus* in having the rump orange, not bright yellow."

Melville Island, Northern Territory.

Witmer Stone's examination of the Philadelphia "types" of the Gouldian collection showed that these were labelled "Port Essington," and I therefore re-examined my series with additional material and named

Pardalotus melanocephalus barroni.

"Differs from *P. m. melanocephalus* in having the rump orange-yellow, not buff; it is also lighter on the back. Cairns, Queensland."

North Queensland.

and

Pardalotus melanocephalus tormenti.

"Differs from *P. m. uropygialis* (from Port Essington) in being lighter on the back and in having a bright yellow rump. Point Torment, North-west Australia."

North-west Australia (coast).

I later added

Pardalotus melanocephalus sedani,

"Differs from *P. m. barroni* in being much paler above and the flanks much darker. Cloncurry River, Queensland."

(Eastern) Northern Territory and Queensland
(adjacent).

BLACK-HEADED PARDALOTE.

These were wrongly placed in the genus *Pardalotus* in my 1913 "List," being the northern species related to *Pardalotinus*.

The nomination and subspecies now read :

Pardalotinus melanocephalus melanocephalus (Gould).

New South Wales (North) and South
Queensland.

Pardalotinus melanocephalus barroni (Mathews).

North Queensland.

Pardalotinus melanocephalus sedani (Mathews).

Western Queensland.

Pardalotinus melanocephalus uropygialis (Gould).

Northern Territory.

Pardalotinus melanocephalus melvillensis (Mathews).

Melville Island, Northern Territory.

Pardalotinus melanocephalus inexpectatus (Mathews).

North-west Australia (Parry's Creek
District).

Pardalotinus melanocephalus tormenti (Mathews).

North-west Australia (Point Torment
District).

Pardalotinus melanocephalus pilbarra (Mathews).

Pilbarra Goldfields (Mid-west Australia).

GENUS—DIPARDALOTUS.

DIPARDALOTUS Mathews, Austral Av.

Rec., Vol. V., pt. I., p. 7, July 17th,

1922. Type (by original designation) *Pardalotus rubricatus yorki* Mathews.

GENERAL characters of *Pardalotus* (type *P. punctatus* Shaw and Nodder) but with the bill stouter and longer with tip decurved and posteriorly notched, the under mandible shallower and not so stout.

The wing more rounded, the so-called second and third primaries longest, the first only equal to the fourth, which is scarcely longer than the fifth.

The legs and feet smaller.

Order PASSERIFORMES.

Family PARDALOTIDÆ.

No. 631.

DIPARDALOTUS RUBRICATUS.

RED-BROWED PARDALOTE.

(PLATE 509.)*

PARDALOTUS RUBRICATUS Gould, Synops. Birds Austr., pt. iv., pl. (62), April 1st, 1838 :
New South Wales.

Pardalotus rubricatus Gould, Synops. Birds Austr., pt. iv., pl. (62), April 1st, 1838 ; *id.*,
Proc. Zool. Soc. (Lond.), 1837, p. 149, Dec. 1838 ; *id.*, Birds Austr., pt. xxiii. (Vol.
II., pl. 36), June 1st, 1846 ; *id.*, Handb. Birds Austr., Vol. I., p. 158, 1865 ; Ramsay,
Proc. Zool. Soc. (Lond.), 1877, p. 350 ; *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 180,
1878 ; Sharpe, Cat. Birds Brit. Mus., Vol. X., p. 60, 1885 ; Ramsay, Proc. Linn.
Soc. N.S.W., Ser. 2, Vol. I., 1886, p. 1,087, 1887 (N.W.A.) ; *id.*, Tab. List Austr. Birds,
p. 4, 1888 ; *id.*, Hall, Key Birds Austr., p. 46, 1899 ; Campbell, Nests and Eggs
Austr. Birds, Vol. I., p. 446, 1901 ; Hall, Emu, Vol. II., p. 53, 1902 (N.W.A.) ;
Carter, *ib.*, Vol. III., p. 93, 1903 (N.W.A.) ; Berney, *ib.*, Vol. V., p. 76, 1905 (N.Q.) ;
North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 229, 1907 ; Mathews, Handl. Birds
Austral., p. 91, 1908 ; *id.*, Emu, Vol. IX., p. 13, 1909 (N.W.A.) ; A. G. Campbell,
ib., p. 22 (Review) ; Mathews, *ib.*, p. 62 (N.W.A.) ; Macgillivray, *ib.*, Vol. X., p.
96, 1910 (N.S.W.) ; *id.*, *ib.*, Vol. XIII., p. 175, 1914 (N.Q.) ; H. L. White, *ib.*, Vol.
XVI., p. 226, 1917 (N.T.) ; Macgillivray, *ib.*, Vol. XVII., p. 203, 1918 (N.Q.) ;
Jackson, *ib.*, Vol. XVIII., p. 169, 1919 (N.S.W.) ; McGilp, *ib.*, Vol. XXII.,
p. 286, 1923.

Pardalotus pallidus Campbell, Emu, Vol. VII., p. 142, Jan. 1st, 1909 : Marble Bar, Mid-
west Australia ; Whitlock, Emu, Vol. VIII., p. 185, 1909 (W.A.) ; Campbell,
ib., Vol. XXI., p. 1, pl. I., 1921.

Pardalotus rubricatus rubricatus Mathews, Nov. Zool., Vol. XVIII., p. 389, 1912 ; *id.*,
List Birds Austr., p. 256, 1913.

Pardalotus rubricatus parryi Mathews, Nov. Zool., Vol. XVIII., p. 390, Jan. 31st, 1912 :
Parry's Creek, North-west Australia ; *id.*, List Birds Austr., p. 256, 1913.

Pardalotus rubricatus pallidus Mathews, Nov. Zool., Vol. XVIII., p. 390, 1912 ; *id.*, List
Birds Austr., p. 256, 1913 ; S. A. White, Emu, Vol. XIV., p. 190, 1915 (Cent.).

Pardalotus rubricatus yorlki Mathews, Austral Avian Record, Vol. II., p. 10, Aug. 2nd, 1913 :
Cape York, North Queensland ; *id.*, List Birds Austr., p. 256, 1913.

* This Plate is lettered *Pardalotus rubricatus*.

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Pardalotus rubricatus leichhardti Mathews, Austral Avian Record, Vol. II., p. 10, Aug. 2nd, 1913: Leichardt River, Mid-Queensland; *id.*, List Birds Austr., p. 256, 1913.
Pardalotus rubricatus musgravi Mathews, Bull. Brit. Orn. Club, Vol. XXXVI., p. 91, July 7th, 1916: Musgrave Ranges, Central Australia.

DISTRIBUTION. Queensland; Northern Territory; North-west Australia as far south as Gascoyne River; Interior of New South Wales and South Australia. An interior form reaching out on to the North-west Coast, as many interior forms do; but also Cape York!

Adult male. Crown of head and nape deep black with white tips to the feathers; fore-head, lores, chin, throat, and fore-part of cheeks buffy-white; supraloral streak red; superciliary streak, which extends along the sides of the crown buff; back pale brown with dark shaft-streaks and a slight tinge of yellow; rump and upper tail-coverts citron-yellow; upper wing-coverts dark brown, some of the feathers slightly edged with white like the bastard-wing; primary-coverts blackish fringed with orange; flight-quills dark brown becoming blackish on the secondaries, some of the feathers are margined with orange and others with white; tail black becoming paler towards the base and fringed with white at the tip; sides of face buffy-white speckled with black; middle of breast orange-yellow; sides of breast and sides of body buff; middle of abdomen inclining to white and tinged with lemon-yellow; under tail-coverts bright lemon-yellow; axillaries and under wing-coverts white; under-surface of flight-quills greyish-brown with whitish margins; lower aspect of tail also greyish-brown fringed with yellowish at the tip. Eyes yellow, upper mandible brown, lower whitish. Total length 92 mm.; culmen 7, wing 61, tail 29, tarsus 19. Figured. Collected at Cape York, North Queensland, on the 11th of May, 1911, and is the type of *P. r. yoriki*.

Adult female similar to the adult male.

Adult male. Crown of head and nape black with white tips to the feathers; fore-head, lores, sides of face, and sides of neck buff, slightly speckled with black on the two last; back, rump, and scapulars, ochreous-brown with dark elongated centres to some of the feathers; upper wing-coverts pale brown on the lesser and median series, becoming blackish on the greater series and bastard-wing, both of which are margined with white; primary-coverts black fringed with orange; flight-quills blackish, some of which are edged with white and others with orange-yellow; upper tail-coverts citron-yellow; tail blackish on the apical portion with pale tips to the feathers, becoming paler towards the base; chin, throat, sides of throat, sides of breast, and sides of body buff; middle of upper breast yellow; middle of lower breast and middle of abdomen inclining to silky-white tinged with yellow; under tail-coverts pale yellow; axillaries and under wing-coverts white; under-surface of flight-quills pale brown with whitish margins; lower aspect of tail similar to its upper-surface but paler. Eyes yellow, feet and legs pale leaden-blue, bill white, culmen brown. Total length 103 mm.; culmen 7, wing 64, tail 31, tarsus 20. Figured. Collected on Parry's Creek, North-west Australia, on the 24th of November, 1908, and is the type of *P. r. parryi*.

Adult female similar to the adult male.

Immature male. General colour of the upper-surface dull yellow, the feathers on the crown of the head paler than the back and narrowly edged with black, which imparts a scalloped appearance; rump and upper tail-coverts somewhat paler than the back; bastard-wing blackish-brown with whitish margins; flight-quills blackish-brown, whitish at the tips and inner-margins and old gold-yellow on some of the outer-webs; tail-feathers blackish with pale edges; lores and a line over the eye yellow

RED-BROWED PARDALOTE.

with a tinge of red on the former; sides of face, throat, and entire under-surface of the body pale yellow, including the thighs and under tail-coverts; axillaries and under wing-coverts silky-white; under-surface of flight-quills hair-brown, slightly paler on the margins; lower aspect of tail similar to its upper-surface but somewhat paler. Culmen brown, remainder of bill white; eyes pale yellow, feet and legs leaden-grey. Collected on Parry's Creek, North-west Australia, on the 16th of November, 1908.

Immature male. Crown of head earth-brown with yellowish margins to the feathers and a few white feathers with deep black margins; hind-neck, sides of neck, back, scapulars, and lesser upper wing-coverts earth-brown with indications of dark shaft-lines on the back; rump and upper tail-coverts dull yellow; bastard-wing, greater-coverts, primary-coverts, and flight-quills blackish with pale margins to the feathers, outer-webs of inner primary-quills and primary-coverts fringed with old gold-yellow; tail-feathers pale brown at the base, blackish towards the tips, which are fringed with buffy-white; base of fore-head, lores and a line over the eye pale yellow with a slight tinge of red; sides of face, throat, breast, abdomen, thighs, and under tail-coverts very pale yellow; axillaries and under wing-coverts silky-white; under-surface of flight-quills hair-brown, slightly paler on the margins; lower aspect of tail similar to its upper-surface, but the shafts of the feathers on the basal portion are white. Culmen brown, remainder of bill white, eyes pale yellow; feet and legs leaden-blue. Collected on Parry's Creek, North-west Australia, on the 14th of December, 1908.

Immature female. Crown of the head olive with yellow tips to the feathers which are minutely margined with black; back, scapulars, rump, and upper tail-coverts dull yellow; lesser upper wing-coverts similar to the back but darker; bastard-wing and greater upper wing-coverts blackish with white, or buffy-white margins; primary-coverts blackish with orange-yellow edges; flight-quills blackish with whitish edges to some of the outer primaries, orange-yellow margins to the inner ones and secondaries, the inner webs broadly margined with white; tail-feathers pale at the base and blackish on the apical portion where they are fringed with white. Feet pinkish (eyes crimson?), bill horn. Collected at Normanton, North Queensland, on the 11th of October, 1913.

Immature female. General colour of the upper-surface pale olive-grey, including the back, scapulars, hind-neck, sides of neck, and crown of the head—the last being rather darker than the back with buffy shaft-lines to the feathers; rump and upper tail-coverts ochreous-buff, becoming darker on the long coverts; wings blackish-brown with white margins to the feathers of the bastard-wing and some of the primary-quills, and pale tips to the secondary-quills; primary-coverts tipped with red; tail brown at the base, becoming blackish on the apical portion, where some of the feathers are marked with white at the tips; eye-brow and sides of crown cream-white; lores orange-yellow; middle of breast and middle of abdomen silky-white tinged with yellow; sides of body yellowish-buff; thighs and under tail-coverts buffy-white; under wing-coverts cream-white; under-surface of flight-quills hair-brown margined with buffy-white; lower aspect of tail similar to its upper-surface. Eyes and feet grey. Bill horn. Collected at Normanton, North Queensland, on the 5th of November, 1913.

Pardalotus rubricatus yorki. (CAPE YORK RED-BROWED PARDALOTE.)

Eggs. Three to four eggs form the clutch. A clutch of four eggs taken at Cooktown, North Queensland, on the 11th of July, 1899, is pure white. Very rounded ovals in shape; surface of shell fine and slightly glossy. 17–18 mm. by 13–14.

THE BIRDS OF AUSTRALIA.

Nest. Similar to that of *P. p. punctatus*. Cup-shaped and composed entirely of fine strips of bark and placed at the end of a tunnel in a bank. External diameter $3\frac{1}{2}$ inches, height $2\frac{1}{2}$, internal $2\frac{1}{4}$ by 2.

Breeding-months. July to September. (March.)

Pardalotus rubricatus pallidus.

Nest and eggs very similar to those of *P. rubricatus yorki*. A clutch of three eggs taken at the Coongan River, Mid-west Australia, on the 17th of August, 1908, is pure white. Swollen to rounded ovals in shape; shell fine but almost without gloss. 18 by 13 mm.

Nest. A domed-shaped or covered over structure, composed of strips of bark, and the cup neatly lined with grasses, and placed in a hollowed out and rounded chamber in the side of a bank, situated at the end of a small tunnel varying from 20 inches to 2 feet or more in length.

Breeding-months. July to October.

ALTHOUGH Gould described this species he knew nothing of its habits, and as late as 1865 could only write: "When I published my plate and description in the folio edition, only a single specimen of this bird had been obtained, and I was unaware in what part of Australia it had been obtained. I have, however, lately seen other specimens collected by Mr. Waterhouse during the overland expedition to the Victoria River under Mr. Stuart. Mr. White of Adelaide also informs me in a letter that he 'saw this bird in considerable numbers about the lat. 27° or 28° .'"

Macgillivray, writing of the birds of the Barrier Range, said: "McLennan dug out the burrow, in the side of a little watercourse, of a Pardalote (*P. rubricatus*); the nest contained three fresh eggs. The nest was cup-shaped, very compact, and constructed entirely of fine strips of bark. Its external diameter was $3\frac{1}{2}$ inches and height $2\frac{1}{2}$ inches; diameter of egg cavity $2\frac{1}{4}$ inches, depth 2 inches. The note of the male bird is quite unlike that of any other Pardalote with which I am acquainted, consisting as it does of a loud, mellow whistle, repeated five times in quick succession. It may be heard at a distance, and was more than once mistaken by us for the call-note of the Barnard Parrakeet."

Later Macgillivray noted: "Numerous throughout the Gulf country, and on the Jardine River, on the Cape York Peninsula. When camped at Sedan several banks where they nested in company with *P. uropygialis* were examined. One contained five burrows of *P. rubricatus* and seven of *P. uropygialis*, another five of *P. uropygialis*, and three of *P. rubricatus*. Still another contained twenty-six burrows, eighteen being those of *P. uropygialis* and eight of *P. rubricatus*. The birds were at these burrows on the 10th February, but no completed clutches were found until the 25th March. On

RED-BROWED PARDALOTE.

the Leichhardt a Red-browed Pardalote was flushed from its burrow, containing a nearly completed nest on the 16th June. Both this species and *P. uropygialis* from the Gulf country are paler in colour than those from the Jardine River."

Captain S. A. White wrote me: "I have met with *P. rubricatus* all through the interior but have never seen it near the coast. Its note is very distinct from that of other members of the group." He has published a longer note: "We did not meet with this bird till we were close on the borders of the Northern Territory. While ascending Christmas Creek I heard its call, which differs much from all the other members of the genus. I knew it was a Pardalote, but had to ? the species. In spite of all my efforts, during the greater part of a very hot day, I was unsuccessful in securing a specimen. It was not until a few days later, at Blood Creek, the same call was heard again, which consists of two notes exactly alike made in quick succession; we then secured a pair. From that time onwards we found them plentiful, nearly always in the gums growing along the watercourses, but on rare occasions we found them out in the mulga scrub."

Jackson has also written from the Diamantina River, Central Queensland: "Common, and usually met with in pairs. Their note is the most remarkable of all the Pardalotes that I have met with. The call consists of six notes (sometimes four) uttered quickly and closely resembles the ordinary six- or eight-note call of *Platycercus eximius* (Rosella)."

Whitlock found the form named *pallidus* on the Pilbarra Goldfield and wrote: "This was the common Pardalote of the district. On the Coongan, wherever there were gums, there its monotonous notes were sure to be heard. On the de Grey it was less common, and I heard little of it between the latter river and the coast. On the upper Coongan the main river was more favoured than the tributaries, but the nests were always in the banks of side creeks, or even in little runlets of no more than 1 foot or 18 inches deep. Where the soil was loamy these runlets had been scoured out by the heavy rain, and I could easily locate the tunnel without much difficulty. As incubation is nearing the end the female sits closely, and I have several times started to dig out the nest before she flew out of the tunnel."

Mr. Tom Carter has written me: "The Pale Red-browed Pardalote is given in your 'Reference List,' 1910, as ranging through West Australia, and the type was obtained at Marble Bar, West Australia, which township is about 170 miles east of Roeburne (Lat. S. 21°), as well in the north-west. It occurs in White Gum timber in creek beds on the tableland rough country, behind the ranges of the North-west Cape, and has also been noted in the same timber *inland* from Point Cloates, as far as the Gascoyne, always in

THE BIRDS OF AUSTRALIA.

White Gums. South of the Gascoyne, it has not been observed by me, but it is quite possible it may extend further south to the Wooramel River (70 miles south) as it is an unobtrusive little bird, and easily overlooked unless its subdued but pretty little song is heard. *Both sexes utter it.* These birds are not uncommon in White Gums about the bed of the Gascoyne River, *one mile* from the sea. Some observers consider it an inland bird only. A nest containing small young birds was found in a steep bank of an island in the Gascoyne River, a mile from sea on Sept. 21st, 1913. The nest was made of dry grass and was about $2\frac{1}{2}$ feet from entrance."

Mr. J. P. Rogers wrote: "At Marngle Creek a few of these birds were seen or oftener heard; their call is softer than that of *P. uropygialis*. At present they are feeding in Eucalyptus and paper-bark (May 28th, 1911). At Mungi this was the common Pardalote and was usually seen in Eucalyptus trees, but was often seen in low wattle scrub."

Mr. Rogers notes from the Fitzroy River, North-west Australia, recorded by Hall, read: "Its note is very soft and repeated twice when calling. The answering notes are pitched in a lower key. I noted one bird having a struggle in the breaking of a large white grub. It went from bough to bough, and stayed very little time on any one branch. On 23rd July, 1901, I found a nest in a bank overhanging a water-hole. The bank was set like cement for the first two inches, after that sand. It is wonderful that such little birds can do this lathe-like drilling. It went in for 18 inches. Dimensions of chamber, $4 \times 4 \times 5.5$ inches; nest lined with paper-bark."

The technical history of this beautiful species is brief and without any complications. When Gould described his new bird he stated that it came from Australia and later admitted he did not know the exact locality. However, Ramsay recorded it from the Ethridge River, Queensland, thus confirming the East Coast habitat, as most of Gould's earlier named species did come from the eastern parts. Later, Ramsay reported upon Cairn's collection from Derby, North-west Australia, and included *Pardalotus rubricatus*, writing: "Similar in every respect to individuals from Central Queensland. This bird appears to be very plentiful a few miles inland from Derby; it is very rarely found in N.S. Wales."

Whitlock then found it on the Pilbarra Goldfield, and struck by the pale coloration Campbell described it as a new species, *Pardalotus pallidus*. Whitlock himself recognised the affinity, naming it *Pardalotus (rubricatus) pallidus* in his field-notes. It is not a common bird save in not easily accessible districts, so that when I prepared my "Reference List" in 1912 I had not a lot of material from many localities. It was obvious, however, that *P. pallidus* was merely a pale race of *rubricatus* and I added a third thus:

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Pardalotus rubricatus rubricatus Gould.

New South Wales, Queensland.

Pardalotus rubricatus parryi Mathews.

"Differs from *P. r. pallidus* in being darker and having a yellowish wash above. Parry's Creek, North-west Australia."

North-west Australia, Northern Territory.

Pardalotus rubricatus pallidus Campbell.

West Australia (Mid).

Soon after, a series of Queensland birds sent by Dr. Macgillivray included the species from Cape York, a most unexpected result, and I distinguished

Pardalotus rubricatus yorki.

"Differs from *P. r. rubricatus* in having a more greenish-yellow rump, and the outer edges of the secondaries orange. Cape York."

North Queensland.

and

Pardalotus rubricatus leichhardti.

"Differs from *P. r. yorki* in being much lighter above. Leichhardt River, Queensland.

Mid-Queensland (Inland).

Then Captain White found the species in the interior, and I named

Pardalotus rubricatus musgravi.

"Differs from *P. r. leichhardti* Mathews in having white (not yellow) under tail-coverts, smaller bill, and the yellow rump not so pronounced. Musgrave Ranges, Central Australia."

Central Australia.

The recognition of the genus *Dipardalotus* makes the forms read :

Dipardalotus rubricatus rubricatus (Gould).

Dipardalotus rubricatus leichhardti (Mathews).

Dipardalotus rubricatus yorki (Mathews).

Dipardalotus rubricatus musgravi (Mathews).

Dipardalotus rubricatus parryi (Mathews).

Dipardalotus rubricatus pallidus (Campbell).

The last named is certainly only subspecifically separable and is even less marked than some of the other subspecies above noted.

GENUS—NESOPARDALOTUS.

NESOPARDALOTUS Mathews, Austral Avian
Record, Vol. I., pt. 5, p. 115, Dec. 24th,
1912. Type (by original designation) .. *Pardalotus quadragintus* Gould.

THIS peculiar form was thus distinguished by me: "Differs from *Pardalotus* in its shorter, heavier bill, and in the wing formula, the first four primaries being longest and subequal."

The bill is very small and almost parrot-like, the arch of the culmen at its zenith higher than its junction with the fore-head and much deeper at its base than wide; the nostrils practically open and the nasal bristles few.

Coloration apparently more primitive than any other species in the family.

NATIONAL MUSEUM WASHINGTON



H. Grönvold, del

Witherby & Co

NE SOPARDALOTUS QUADRAGINTUS.
(FORTY-SPOTTED PARDALOTE).

CYRTOSTOMUS FRENATUS.
(SUN-BIRD).

NESOPARDALOTUS QUADRAGINTUS.

FORTY-SPOTTED PARDALOTE.

(PLATE 510.)

PARDALOTUS QUADRAGINTUS Gould, Synops. Birds Austr., pt. iv., pl. (62), April 1st, 1838 : Tasmania.

Pardalotus quadragintus Gould, Synops. Birds Austr., pt. iv., pl. (62), 1838 ; *id.*, Proc. Zool. Soc. (Lond.), 1837, p. 148, Dec. 1838 ; *id.*, Birds Austr., pt. xii. (Vol. II., p. 37), Sept. 1st, 1843 ; *id.*, Handb. Birds Austr., Vol. I., p. 160, 1865 ; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 180, 1878 ; Sharpe, Cat. Birds Brit. Mus., Vol. X., p. 62, 1885 ; Leggo, Papers Proc. Roy. Soc. Tasm., 1886, p. 241, 1887 ; Ramsay, Tab. List. Austr. Birds, p. 4, 1888 ; Hall, Key Birds Austr., p. 47, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 449, 1901 ; A. G. Campbell, Emu, Vol. II., p. 208, 1903 (King Island) ; North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 233, 1907 ; Mathews, Handl. Birds Austral., p. 91, 1908 ; A. G. Campbell, Emu, Vol. IX., p. 22, 1909 (Review) ; Littler, Handb. Birds Tasm., p. 67, 1910 ; Mathews, Nov. Zool., Vol. XVIII., p. 390, 1912.

Nesopardalotus quadragintus Mathews, List Birds Austr., p. 258, 1913.

Nesopardalotus quadragintus rex Mathews, Austral Av. Rec., Vol. V., pts. 2-3, p. 37, Feb. 21st, 1923 : King Island, Bass Strait.

Nesopardalotus quadragintus quadragintus Mathews, *ib.*

DISTRIBUTION. Tasmania : King Island, Bass Straits.

Adult male. General colour of the upper-surface dark yellowish-olive with dark fringes to the feathers, which imparts a scalloped appearance including the top of the head, sides of the face, sides of the neck, hind-neck, entire back, rump, upper tail-coverts, and scapulars ; upper wing-coverts and flight-quills blackish-brown with white tips to the feathers ; tail dark brown narrowly fringed with white at the tips of most of the feathers and for some distance down the outer-web of the outermost feather ; rectal-bristles short but numerous ; ear-coverts golden-yellow ; under-surface greyish-white with grey spots at the tips of the feathers on the throat, breast, and abdomen, becoming darker and inclining to ochreous-yellow on the sides of the body and thighs ; vent whitish ; under tail-coverts yellow ; axillaries and under wing-coverts whitish ; under-surface of flight-quills dark hair-brown with pale margins ; lower aspect of tail similar to its upper-surface but paler. Bill black, feet black-brown, eyes dark. Total length 94 mm. ; culmen 6, wing 59, tail 32, tarsus 18. Figured. Collected in Tasmania.

Adult female. Similar to the adult male.

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Eggs. Three to four eggs usually form the clutch. A clutch of three eggs taken at Mount Faulkner, Tasmania, on the 25th of November, 1893, is pure white. Swollen ovals in shape; surface of shell fine, and slightly glossy. 16-17 mm. by 12.

The Nest, which is composed of grass and bark, etc., is placed in a hole or small hollow of a tree at heights of from 20 to 40 feet.

Nest. Placed at the end of hole; cup-shaped and composed of pieces of soft bark and grass. Outside dimensions, $2\frac{1}{2}$ inches deep by 5 wide. Inside $1\frac{1}{2}$ deep by $2\frac{3}{4}$ wide.

Breeding-months. September to January.

Gould, who described this interesting species, wrote: "This species is, I believe, peculiar to Tasmania, where it inhabits the almost impenetrable forests which cover that island, particularly those of its southern portion. It is, I think, less numerous than either of its congeners, the *Pardalotus affinis* and *P. punctatus*, and appears to confine itself more exclusively to the highest gum-trees than those species. I found it very abundant in the gulleys under Mount Wellington, and observed it breeding in a hole in one of the loftiest trees, at about forty feet from the ground; I afterwards took a perfectly developed white egg from the body of a female killed on the 5th of October. The weight of this little bird was rather more than a quarter of an ounce; the stomach was muscular, and contained the remains of the larvæ of lepidoptera, which with coleoptera and other insects constitute its food. It has a simple, piping kind of note of two syllables. In its actions it much resembles the Tits, creeping and elinging among the branches in every direction."

Mr. Frank Littler has written me: "Fairly common in Tasmania and King Island only, and mainly met with in the south of Tasmania, rarely in the north-east. Owing to its small size and retiring habits it is the least observed of the Diamond-Birds. The general tone of the plumage assimilates so with the foliage of the trees that it is very difficult to detect. Furthermore it nearly always keeps amongst the topmost twigs of the trees and, unlike the other two species met with in Tasmania, rarely descends to the ground in search of food. The food comprises all descriptions of insects, procured among the foliage and from under the bark, and in obtaining them the bird displays great activity. In disposition it is very shy, quickly moving from the immediate vicinity should any real or seeming danger threaten. Breeding-months September to January."

This seems to be the rarest and most interesting of Pardalotes and to have the least known about it and the scantiest of literature in every way.

Two subspecies can be admitted:

Nesopardalotus quadrigintus quadrigintus (Gould).

Tasmania.

Nesopardalotus quadrigintus quadrigintus Mathews.

King Island.

FAMILY—NECTARINIIDÆ.

GENUS—CYRTOSTOMUS.

CYRTOSTOMUS Cabanis, Mus. Heine, Vol. I., p. 105

(after Oct.), 1851. Type (by monotypy) .. *Certhia jugularis* Linné.

THIS is only representative of the family of Sun-Birds at present allowed in the Australian avifauna. The family is very numerous in Africa and through India and further Asia, this sole true Sun-Bird occurring only in North Queensland, being thus a comparatively recent immigrant.

Recently Shufeldt has observed (*Emu*, Vol. XIII., p. 9, 1913) that: "*Acanthorhynchus* belongs among the Nectariniidæ," but as in that paper he also indicates some other anomalies existent in the "Meliphagidæ," I am not disturbing the order at present, but decidedly agree that many of the Meliphagine genera require drastic rearrangement and that others will probably accompany *Acanthorhynchus* into this family.

The present genus comprises very small birds with long, thin, curved bills, short rounded wings, short square tail and small delicate legs and feet.

The bill is long and thin, much longer than the head, and almost straight for half its length, rapidly curves to a very fine tip; it is very slender anteriorly, but basally shows a little expansion, the basal edges spreading a little; the culmen is also keeled basally, the nostrils appearing as linear slits in a short nasal groove with a noticeable horny operculum; there are no nasal bristles and no appreciable rictal bristles; the depth of the bill at the base is about equal to the width; the lower mandible is similarly slender with a very short feathered interramal space. The edges of both mandibles are very finely serrated for the anterior half, which must be for insect catching, not honey eating.

The wings are short and rounded, the first primary small, only about one-third the length of the second which is about equal to the seventh, the third, fourth and fifth subequal and longest, the sixth a little shorter, the eighth and ninth little less and exceeding by a little the long secondaries.

The tail is short and square, the upper tail-coverts about half the length of the tail-feathers, the lower a little more than half.

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The legs are small and delicate, but the tarsus which is less than the bill in length shows five strong scutes anteriorly and is bilaminate posteriorly; the toes are short, the claws comparatively long and sharp; the hind-toe and claw is longest and strongest, the hind-toe and claw exceeding the middle toe and claw, while the outer and inner toes are short, the latter the shorter.

There is nothing much in this to indicate any difference from the Honey-eaters, such as *Myzomela*, etc.

Order PASSERIFORMES.

Family NECTARINIDÆ.

No. 633.

CYRTOSTOMUS FRENATUS.

SUN-BIRD.

(PLATE 510.)

[NECTARINIA FRENATA Sal. Müller, Verh. Nat. Gesch. Land-en Volkenk., No. 6, p. 173, 1843: Baie de Lobo, S.W. New Guinea. Extra-Limital.]

Nectarinia australis Gould, Contr. Ornith. (Jardine), 1850, p. (160) 106: Port Molle, Queensland.

Nectarinia australis Gould, Contr. Ornith. (Jardine), 1850, p. (160) 106; *id.*, Proc. Zool. Soc. (Lond.), 1850, p. 201, Feb. 28th, 1851; Birds Austr., Suppl., pt. i., pl. 45, March 15th, 1851; Gould, Handb. Birds Austr., Vol. I., p. 584, 1865; Ramsay, Ibis, 1865, p. 85; *id.*, Proc. Zool. Soc. (Lond.), 1875, p. 598.

Cyrtostomus australis Reichenbach, Handb. Scansores, p. 309, 1854.

*Cinnyris frenata** Shelley, Monogr. Nectar., p. 153, pl. 49, 1878; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 191, 1878; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 85, 1884; Ramsay, Tab. List Austr. Birds, p. 14, 1888; Hall, Key Birds Austr., p. 36, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 344, 1901; North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 205, 1907; Cornwall, Emu, Vol. VIII., p. 139, 1909; Macgillivray, *ib.*, Vol. X., pp. 216-227, 1910; Broadbent, *ib.*, p. 239.

Cyrtostomus frenatus Mathews, Handl. Birds Austral., p. 91, 1908; Barnard, Emu, Vol. XI., p. 28, 1911; Macgillivray, *ib.*, Vol. XIII., p. 176, 1914; Campbell and Barnard, *ib.*, Vol. XVII., p. 30, 1917; Macgillivray, *ib.*, Vol. XVII., p. 203, 1918; Campbell, *ib.*, Vol. XX., p. 63, 1920; Cornwall, *ib.*, Vol. XXI., p. 69, 1921.

Cinnyris frenata australis Mathews, Nov. Zool., Vol. XVIII., p. 390, 1912.

Cinnyris frenata olivei Mathews, *ib.*, p. 391, Jan. 31st, 1912: Cairns, North Queensland.

Cinnyris frenata macgillivrayi Mathews, Austral Avian Record, Vol. I., pt. 4, p. 97, Sept. 18th, 1912: Cape York, North Queensland.

Cinnyris frenata australis Mathews, *ib.*

Cyrtostomus frenatus macgillivrayi Mathews, List Birds Austr., p. 258, 1913.

Cyrtostomus frenatus australis Mathews, *ib.*

DISTRIBUTION. North Queensland only, from Cape York southward to MacKay.

Adult male. General colour of the upper-surface dull old-gold-yellow, including the top of the head, sides of face, back, rump, upper tail-coverts, scapulars, upper wing-

* Also spelt *frenatus*.

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coverts, and outer margins of flight-quills; bastard-wing, primary-coverts, and inner-webs of flight-quills blackish-brown; tail black with yellowish-white tips to the feathers increasing in extent on the outermost; a pale yellow moustacial streak along the sides of the face; chin, throat, and fore-neck glossy steel-blue; breast, abdomen, sides of body, thighs, vent, and under tail-coverts orange-yellow; a patch of bright orange on each side of the breast; axillaries pale yellow; under wing-coverts whitish tinged with yellow; under-surface of flight-quills blackish-brown, somewhat paler on the margins; lower aspect of tail similar to its upper-surface. Bill and feet black, eyes dark brown. Total length 110 mm.; culmen 21, wing 57, tail 35, tarsus 16. Figured. Collected at Cairns, North Queensland, in August, 1908, and is the type of *Cinnyris frenata olivei*.

Adult female. Differs from the adult male in the absence of the glossy steel-blue on the chin, throat and breast. General colour of the upper-parts dull old-gold-yellow, including the top of the head, sides of face, hind-neck, sides of neck, entire back, upper tail-coverts, scapulars, upper wing-coverts, and outer margins of flight-quills; bastard-wing and flight-quills blackish-brown; tail black with yellowish-white tips to the feathers, which are most extensive on the outermost feathers; chin, throat, breast, abdomen, sides of body, thighs, under tail-coverts, and axillaries orange-yellow; under wing-coverts white, more or less tinged with yellow; under-surface of flight-quills blackish-brown; lower aspect of tail similar to its upper-surface. Bill and feet black, eyes brown. Total length 105 mm.; culmen 20, wing 54, tail 33, tarsus 16. Figured. Collected at Cairns, North Queensland, in October, 1908.

The female differs in being uniform yellow on the under-surface, lacking the coloured throat and yellow side feathers.

Immature male. General colour of the upper-parts yellowish-green, including the top of the head, sides of face, entire back, scapulars, upper tail-coverts, and upper wing-coverts; bastard-wing and inner-webs of flight-quills blackish-brown margined with white on the latter; tail blackish with yellowish-white tips to the lateral feathers; an indication of a yellowish-white superciliary line; the approach of adult plumage is seen on the lores, cheeks, chin, throat, and fore-neck, where the feathers are black, glossed with steel-blue reflections, intermixed with yellow; remainder of cheeks, breast, abdomen, sides of body, thighs, and under tail-coverts yellow; under wing-coverts cream-white; under-surface of flight-quills hair-brown; lower aspect of tail similar to its upper-surface, but the yellowish-white portion more conspicuous.

Eggs. Two to three eggs form the clutch. A clutch of three taken at Lockerbie, Cape York, North Queensland, on the 28th of November, 1910, is of a pale greenish-grey ground-colour, speckled and mottled nearly all over, and particularly at the larger end of each egg, with umber. Lengthened ovals in shape; surface of shell smooth and slightly glossy. 16-17 mm. by 11.

Nest. A long oval structure, and usually with a very long tail to it, and with entrance on the side. Most frequently suspended on the twig of a small bush, and often close to the ground. Sometimes the nest is fastened to suspended pieces of rope and other suitable material hanging about homesteads in the bush, especially in verandahs. The body of the nest is about 7 inches long, and the tail, which is additional, varies from 2 to 8 inches or more. Width of nest at widest part, $2\frac{1}{2}$ to nearly 3 inches. Entrance of nest is almost 3 inches from the top, and well on the centre of body, and measures nearly one inch across. It is constructed of pieces of bark, fine roots, dead leaves, cobwebs, etc., and lined with a very soft material.

Breeding-months. September to end January. (February).

SUN-BIRD.

WHEN Macgillivray collected birds during the survey of H.M.S.S. The Rattlesnake he sent the novelties home to Gould for use in his "Supplement." These proved to be of such importance that Gould gave an account of them before the British Association for the Advancement of Science meeting in 1850, at the same time publishing the species in the *Proceedings of the Zoological Society of London*. A report of the Association account was published by Jardine in his *Contributions to Ornithology* in 1850, while the *Zoological Society's Proceedings* did not appear until 1851. In the report Gould read Macgillivray's letters and this sentence appears: "At Port Molle I shot in the brushes both *Megapodius* and *Talegalla*, also *Chalcophaps chrysochlora*, and a *Macropygia*, respecting which I am anxious to have your opinion; it appears to me to be smaller than *M. phasianella*. Here the Captain's servant shot a small *Nectarinia pectoralis*, respecting which I gave you a note of its having been found by Captain Ince and myself to the northward." Gould added: "I have carefully examined the specimens of *Macropygia*, and find the differences too slight to admit of its being regarded as distinct." The *Macropygia* was, however, smaller as Macgillivray stated, and is a distant subspecies which I named sixty years later.

The Sun-Bird Gould described as a new species under the name *Nectarinia australis*, writing: "Differs from *N. frænata* in its larger size, in its straighter bill, and in the stripe of yellow over the eye being almost obsolete. It is the bird spoken of in Mr. Macgillivray's paper as *N. pectoralis*, which name cannot be retained, as it had been previously applied to another member of the genus."

Gould then recorded Macgillivray's notes, writing: "The *Nectarinia australis* offers a very close alliance to the *N. frænata* of the Celebes; it will be found, however, to differ from that species in its larger size, in the mark above the eye being less conspicuous, and in the straighter form of the bill. (Note.—Here Gould mentions that his comparison was with Celebesian birds, but New Guinea was the true locality for *N. frenata*.) For my first knowledge of this bird I am indebted to the researches of the late Commander Ince, R.N., who, while attached to H.M.S. Fly, paid considerable attention to the natural history of the northern parts of Australia. Since then many other specimens have been forwarded to me by Mr. Macgillivray and others. Mr. Macgillivray informed me that "this pretty Sun-Bird appears to be distributed along the whole of the north-east coast of Australia, the adjacent islands, and the whole of the islands in Torres Straits. Although thus generally distributed, it is nowhere numerous, seldom more than a pair being seen together. Its habits resemble those of the *Ptilotes* with which it often associates, but still more closely to those of *Myzomela obscura*; like those birds, it resorts to the flowering trees to feed upon the insects which frequent

THE BIRDS OF AUSTRALIA.

the blossoms, especially those of a species of *Sciadophyllum*; this singular tree is furnished with enormous spike-like racemes of small flowers, which attract numbers of insects, and thus furnish an abundant supply of food to the present bird and many species of Meliphagidæ. Its note, which is a sharp shrill cry, prolonged for about ten seconds, may be represented by 'Tsee-tsee-tsce-tss-ss-ss-ss.' The male appears to be of a pugnacious disposition, as I have more than once seen it drive away and pursue a visitor to the same tree; perhaps, however, this disposition is only exhibited during the breeding season. I found its nest on several occasions . . . contained a young bird, and an egg with a chick almost ready for hatching. The female was seen approaching with a mouthful of flies to feed the young. . . . A nest was found . . . contained two young birds, and I saw the mother visit them twice with an interval of ten minutes between; she glanced past like an arrow, perched on the nest at once, clinging to the lower side of the entrance, and looked round very carefully for a few seconds before feeding the young, after which she disappeared as suddenly as she had arrived."

Ramsay recorded Rainbird's notes from Port Denison: "Numbers of this beautiful little Sun-Bird may be seen on bright mornings among the leafy tops of the mangrove belts near Port Denison. They are ever darting out to capture some insect on the wing, returning and disappearing again in the thick foliage, or perching upon some topmost twig, to devour their captures, and show their shining purple breasts glittering in the sun. During the hottest part of the day the Sun-Birds betake themselves to the thick scrub, which in many places runs down to the water's edge. They breed in the months of November and December."

Mr. Thos. P. Austin has written me: "I often saw this species while in North-eastern Queensland during the spring of 1907. They appear to take a great delight in building their nests to hanging pieces of rope suspended under verandah, such as where blinds or hammocks have been hung. I saw two of their nests in such a situation, at an hotel at Harvey's creek about 25 miles south from Cairns, and I was informed that the birds came there to breed every year. I only saw one nest away from a dwelling; this was placed about five feet from the ground in a large leaved shrub, growing on the bank of a tidal creek a few miles north from Mackay. It was a very hot day and I got off the bicycle I was riding and went under the shade of this bush for a rest, when a pair of Sun-Birds almost immediately put in an appearance, the female soon going on the nest, which was within a few feet of my face and contained two fresh eggs."

Cornwall has recorded from Mackay, North Queensland: "Our lovely little representative of the large family of Humming Birds, the Sun-Bird

SUN-BIRD.

(*Cinnyris frenata*) may be noted almost everywhere. Its dainty pensile nest is quite a common object in outbuildings or verandahs, both in town and country, whilst many are found suspended over water in the swamps or snugly hidden away amongst the dense thickets of *Lantana*. When robbed of their eggs they sometimes lay again in the same nest. A friend of mine took four pairs of eggs from the same nest at intervals of exactly seven days. They laid a fifth pair, and reared their young, my friend considering that their pertinacity had been fairly tested and was worthy of reward. The nesting season extends from September to February, but odd pairs may be found breeding both before and after those dates. Two eggs form the usual complement, but on 26th December a nest was found which contained the usual number of three eggs."

In 1921 Cornwall again wrote: "I am glad to be able to report that the pretty little Sun-Bird (*Cyrtostomus frenatus*) is again in our district. It was completely wiped out by the cyclone of 1918. There are very few here yet, but I was pleased to find a pair in my paddock a few weeks ago, and I am in hopes that they will breed up again."

Ramsay in 1875 wrote: "I only met with this interesting species on one occasion near Cardwell; it is by no means common in that district."

Broadbent in 1888 stated: "Common all the year, feeding on the flowers in the gardens near the beach, Cardwell."

Campbell and Barnard in 1917 write from the same district: "The gaily dressed (male, rich lemon-chrome under-parts and metallie navy-blue throat) Sun-Birds, of Humming-Bird appearance, are indeed tangible evidence of the tropics. They were noticed only in the coastal region, sipping nectar from various flowers. They were often observed about dwellings, fossieking the flowers of pa-paw, citrus, and other trees of gardens; and they love sometimes to build their nests in verandahs or near houses. One nest observed in the bush was prettily situated underneath a bunch of ferns, and suspended to a dead frond. When the little bird flits from flower to flower it utters a Tit-like 'Chip' or 'Chip, chip.' The song is *Malurus* like, a pretty rattling warble."

Macgillivray wrote: "Very plentiful at Cape York," and later "We first noted Sun-Birds at Cooktown wharf, where one was collecting building material from amongst some bushes, and then at Lloyd's Island, where we saw a female plucking capok from its pod for the same purpose. Later again, when going up or down the Claudie, their nests were often seen hanging from some shrub or bough overhanging the river. On our return journey, Mr. Olive of Cooktown, showed us where one of these birds was sitting in a nest attached to the string that pulled the shower in his bathroom. So that the

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birds could rear their brood undisturbed, Mr. Olive cut the string with the nest on it and hung it to a hook in the ceiling. The birds did not seem to mind the people who came into the room, the sitting bird rarely moving even when the bath and shower were used. This species is also common on the Archer River."

Recently McLennan collected birds on the islands in Torres Straits, and Campbell recorded: "*C. frenatus*. Two ♂♂. Absolutely no difference between these, Cape York and Cardwell specimens, and are doubtless typical *frenatus*. Common, and found nesting."

In this statement there are three inaccuracies, if not more, as they are not typical *frenatus*, and Cape York and Cardwell birds differ.

As noted above, when Gould received this bird from Macgillivray he described it as a new species, comparing it with *N. frenata* and indicating the differences. He, however, later noted that his *N. frenata* was from Celebes, whereas the type locality of *N. frenata* was New Guinea. When this was recognised the Australian bird was regarded as identical with the New Guinea form and it was called *frenata*. When I prepared my "Reference List" in 1912 I was able to compare New Guinea birds from the type locality with Australian specimens and found them to differ and, moreover, that two quite distinct forms were recognisable in North Queensland. As Gould stated in the accessible reference that his birds came from the Cape York district I reinstated his specific name with subspecific rank for the Cape York form and distinguished the Cairns bird as

Cinnyris frenata olivei.

"Differs from *C. f. australis* in having a longer bill and the lower breast and abdomen deep orange-yellow."

Later I came across the report above quoted in Jardine's Contributions wherein it appears that the Port Molle bird was the original form Gould named and so I corrected the above, writing

Cinnyris frenata macgillivrayi Mathews.

"Differs from *C. f. australis* Gould (*C. f. olivei* Mathews) in its shorter bill and greener or lemon-yellow lower breast and abdomen; and from *C. f. frenata* Muller (typical specimens procured by Brit. Orn. Exp., New Guinea) in its longer bill and larger size. Cape York."

and in my 1913 "List" arranged them under *Cyrtostomus* as

Cyrtostomus frenatus macgillivrayi (Mathews).

North Queensland (Cape York district).

Cyrtostomus frenatus australis (Gould).

North Queensland (Cairns district).

FAMILY MELITHREPTIDÆ.

THE Honey-eaters of Australia constitute one of the composite unnatural groups which characterise geographical divisions and show one remarkable feature, in this instance the brush tongue. This was seized upon as a valuable feature one hundred years ago and has since been utilised, apparently for the sake of convenience, because it is obvious that the birds so classed are not phylogenetically so closely related as the possession of this one peculiar feature might imply.

Historically, the feature apparently first attracted the attention of Mr. Anderson, who accompanied Cook's Last Voyage, and in his Manuscripts, preserved in the British Museum, he had created a new genus, *Anthophagus*, for this group. Latham accepted this and used it in his MS. for his second edition of his *Index Ornithologicus* which was never published. In 1828, however, Jennings published Latham's name, but by this time it had been anticipated and the name moreover used in another connection.

The first published name is *Meliphaga* given by Lewin and this has been commonly used, but the name had been also anticipated under a slightly different spelling for an insect.

Then *Melithreptus* was proposed by Vieillot for the same series, but as only one species was indicated at the time of its first publication its status is clear, while it becomes the basis of the family name as above given. This so-called family contains species of minute size as well as species of large size and of much varied appearance and, as far as can be gauged from a superficial examination, of very varied origin.

At the request of Mr. A. J. Campbell a report on the Osteology of the Red Wattle-bird (*Anthochaera carunculata*) was prepared by Dr. Shufeldt and published in the *Emu*, Vol. XIII., pp. 1-14, 1913. It is difficult from this essay to understand what constitutes a Meliphagine bird, the only point of importance given by Shufeldt being that *Acanthorhynchus* is a Sun-Bird. How the Sun-Birds differ from the Honey-eaters as a whole is not stated, and as he had only half a dozen forms, I cannot state whether all the "Myzomeline" birds are Sun-Birds or Honey-eaters.

Again, as Shufeldt concludes that *Anthochaera carunculata* comes nearer to *Prothemadera novæzealandiæ* than it does to *Entomyza cyanotis*, and that the skull of *Prothemadera novæzealandiæ* is very peculiar, it will be recognised

THE BIRDS OF AUSTRALIA.

that the relationship of the smaller forms to these large ones is quite unknown, and leaves a great field for study in this group.

In the group known as "*Ptilotis*," for a number of years many well differentiated genera have been confused, and famous extra-limital workers have been astonished at the idea of classing some of the forms together when I have asked their opinion, suggesting that probably different families were represented and this is certainly the truth.

It may be noted that *Melithreptus* itself is somewhat aberrant, constituting a well-defined very restricted little group with two distinct species in Tasmania, so that it may not be a *true* "Honey-eater" at all. This has been suggested previously, but no data has been furnished yet, though a Zosteropine affinity has been suggested, yet I do not think this is at all probable.

GENUS—MELITHREPTUS.

Melithreptus Vieillot, Analyse nouv. Ornith., p. 46,
 April 14th, 1816. Type (by monotypy) .. “*Heorotaire fuscalbin*”
 = *Certhia lunata* Vieillot.

Also spelt—

Mellithreptus Lesson, Traite d'Orn.

Melitreptus Vieillot, Tabl. Ency. Method., Vol. II., p. 600, 1822.

Melithreptes Gray, Annals Mag. Nat. Hist., Vol. XI., p. 191, 1843.

Hæmatops Gould, Synops. Birds Austr., pt. I.,
 pl. (17), Jan. 1st, 1837. Type (by subsequent
 designation): Bonaparte Comptes Rendus
 Acad. Sci., Paris, Vol. XXXVIII., p. 264,
 1854 *Certhia lunulata* Shaw,
 i.e., Vieillot.

Gymnophrys Swainson, Classif. Birds, Vol. II.,
 p. 327, July 1st, 1837. Type (by monotypy) *G. torquatus*=
Certhia lunata Vieillot.

Eidopsarus Swainson, Classif. Birds, Vol. II.,
 p. 327, July 1st, 1837. Type (by monotypy) *E. bicinctus*=
H. validirostris Gould.

Also spelt—

Idopsarus Agassiz, Index Universalis, p. 194, 1846; p. 389, 1848.

Eidopsaris Swainson, Anim. in Menag., p. 344, Dec. 1837.

Eudopsarus Bonaparte, Consp. Gen. Av., Vol. I., p. 395, 1850.

SMALL Honey-eaters with short comparatively straight bills, fairly long wings, long square tail and small legs and feet. The bill is short and straight, less than or just equal to the length of the head, the culmen slightly arched, compressed laterally with slight basal expansion, and keeling, tip sharp and pointed, not decurved; there are no nasal bristles and rictals obsolete. The nasal groove is comparatively long, almost a third the length of the bill, the nostrils linear slits with prominent operculum; the edges of upper mandible straight with slight curvature, as the lower mandible is nearly straight with long interramal space fully feathered more than one-third the length of the bill. There is a coloured bare skin round the eye.

The wing is long with pointed tip consisting of the third, fourth, fifth and sixth primaries, the third equal to the sixth, the fourth and fifth slightly

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longer and subequal, the second being noticeably shorter and equal to the seventh, the first narrow and very small, less than one-fifth the length of the second; secondaries medium.

The tail is long and square, tail-coverts short.

The legs are small, the tarsus little longer than the exposed culmen, the anterior portions covered with five scutes with a tendency to coalescence, the posterior portion bilaminate. The toes are short, the hinder-toe and claw stoutest and longest, all claws comparatively small; anterior toes delicate, inner a little less than the outer.

This small, well-defined group with no near relations provides a pleasant little study in the evolution of Australian birds. The series has developed from a rather plain little bird in various manners, probably at varied times, the species retaining the coloration nearest the ancestral one being *M. atricapillus*. This was mistaken for an immature by Gould, and quite recently De Vis described the immature of the most highly developed species as a new species allied to *atricapillus*. Its distribution is southern, but more restricted to the dry, poor Mallee lands; it also occurs on Kangaroo Island. This is quite an important item in the philosophical criticism of Australian bird-life. Then two black-headed variations evolved, one with a blackish throat, one without. The former exists in Tasmania as a larger bird altogether, the latter is missing, but a bird with an entirely black head and neck and throat appears in its place. In the north the former has grown a little large but appears in a more gaudy plumage as regards the back, otherwise with little change, while the latter shows scarcely any variation whatever.

Key to the Species.

Melithreptus.

Head and throat black	<i>M. affinis</i>
Head brown (under-surface not white)	<i>M. atricapillus</i>
Head black; white crescent-shaped mark on nape, under-surface white (smaller)	<i>M. lunatus</i>
Small black patch on throat, under-surface dull (larger)	
No yellow collar on neck	<i>M. validirostris</i>
Small yellow collar on neck	<i>M. gularis</i>
Pronounced yellow collar on neck (rump yellow) ..	<i>M. laticor</i>

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MELITHREPTUS ATRICAPILLUS
(BROWN-HEADED HONEY-EATER.)

MELITHREPTUS LUNATUS
(WHITE-NAPED HONEY-EATER.)

MELITHREPTUS LUNATUS.

WHITE-NAPED HONEY-EATER.

(PLATE 511.)

CERTHIA LUNATA Vieillot, Oiseaux Dorés, Vol. II., p. 122, pl. 61, 1802; ex Shaw MS.: New South Wales.

Certhia lunata Vieillot, Oiseaux Dorés, Vol. II., p. 122, pl. 61, 1802; Bechstein, Kurze Uebers. Vögel, p. 196 (pref. April 12th, 1810), 1811; Shaw, Gen. Zool., Vol. VIII., pt. I., p. 224=242, 1811.

Melithreptus albicollis Vieillot, Nouv. Dict. d'Hist. Nat., nouv. ed., Vol. XIV., p. 325, Sept. 13th, 1817: Nouvelle Hollande in Mus. Paris coll. Peron and Lesueur=New South Wales; Pucheran, Archiv. Mus. d'Hist. Nat. Paris, Vol. VII., p. 348, 1855.

Melithreptus albicapillus Vieillot, Nouv. Dict. d'Hist. Nat., nouv. ed., Vol. XIV., p. 329, Sept. 13th, 1817; ex Temminck MS.: Nouvelle Hollande=New South Wales.

Meliphaga torquata Swainson, Zool. Illus., Ser. I., pl. 129, (Nov.) 1822: New South Wales. Black-crowned Honey-sucker Lewin, Birds New South Wales, pl. 24, 1822.

Meliphaga atricapilla Temminck and Laugier, Planch. Color. d'Ois., 56^e livr. (Vol. III., pl. 335, f. 1), April 16th, 1825: New South Wales (probably based on same bird as Vieillot named *albicapillus* above).

Not—

Certhia atricapilla Latham, Index Ornith. Suppl., p. xxxvii, 1801, which is a species of *Melithreptus*.

Meliphaga lunulata Vigors and Horsfield, Trans. Linn. Soc. (Lond.), Vol. XV., p. 315, 1827.

Certhia lunulata "Shaw," *id.*, *ib.*

Hæmatops lunulatus Gould, Synops. Birds Austr., pt. I., pl. (17), 1837.

Gymnophrys torquatus Swainson, Classif. Birds, Vol. II., p. 327, 1837.

Melithreptus lunulatus Gray, List Genera Birds, p. 16, 1840; Gould, Birds Austr., pt. xxx. (Vol. IV., pl. 72), March 1st, 1848; *id.*, Handb. Birds Austr., Vol. I., p. 568, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 190, 1878; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 204, 1884; Ramsay, Tab. List Austr. Birds, p. 14, 1888; Hall, Key Birds Austr., p. 38, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 359, 1901; Batey, Emu, Vol. VII., p. 9, 1907 (Vic.); Ingle, *ib.*, Vol. X., p. 124, 1910 (Vic.); S. A. White, *ib.*, Vol. XIV., p. 143, 1915 (Mallacoota); Cheney, *ib.*, p. 211 (Vic.); Purnell, *ib.*, Vol. XV., p. 43, 1915 (Vic.); Campbell and Barnard, *ib.*, Vol. XVII., p. 30, 1917 (Q.); Le Souëf and Macpherson, *ib.*, Vol. XX., p. 90, 1920 (N.S.W.).

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- Melithreptus chloropsis* Gould, Birds Austr., pt. xxx. (Vol. IV., pl. 73), March 1st, 1848 : West Australia (i.e., Swan River District); *id.*, Proc. Zool. Soc. (Lond.), 1847, p. 220, March 29th, 1848; *id.*, Handb. Birds Austr., Vol. I., p. 570, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 190, 1878; *id.*, Tab. List Austr. Birds, p. 14, 1888; Hall, Key Birds Austr., p. 38, 1899; Milligan, Emu, Vol. II. p. 73, 1902; *id.*, *ib.*, Vol. III., pp. 18-22, 1903; North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 183, 1907; Mathews, Handl. Birds Austral., p. 92, 1908; Orton and Sandland, Emu, Vol. XIII., p. 79, 1913; S. A. White, *ib.*, Vol. XX., p. 128, 1921; Alexander, *ib.*, p. 167.
- Melithreptus albogularis** Gould, Birds Austr., pt. xxx. (Vol. IV., pl. 74), March 1st, 1848; *id.*, Proc. Zool. Soc. (Lond.), 1847, p. 220, March 29th, 1848 : Northern and Eastern Australia=Port Essington, Northern Territory; *id.*, Handb. Birds Austr., Vol. I., p. 571, 1865; Ramsay, Proc. Zool. Soc. (Lond.), 1875, p. 597; *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 190, 1878; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 205, 1885; Ramsay, Tab. List Austr. Birds, p. 14, 1888; Hall, Key Birds Austr., p. 38, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 362, 1901; Hall, Emu, Vol. I., p. 101, 1902 (N.W.A.); North, Austr. Mus. Spec. Cat. No. I., Vol. II., p. 184, 1907; Mathews, Handl. Birds Austral., p. 92, 1908; *id.*, Emu, Vol. IX., pp. 13-62, 1909 (N.W.A.); Broadbent, Emu, Vol. X., p. 239, 1910 (N.Q.); Hill, *ib.*, p. 283, 1911 (N.W.A.); Barnard, *ib.*, Vol. XI., p. 28, 1911 (N.Q.); Macgillivray, *ib.*, Vol. XIII., p. 176, 1914 (N.Q.); Barnard, *ib.*, Vol. XIV., p. 48, 1914 (N.T.); White, *ib.*, Vol. XVI., p. 227, 1917 (N.T.); Campbell and Barnard, *ib.*, Vol. XVII., p. 31, 1917 (Q.); Macgillivray, *ib.*, p. 204, 1918 (N.Q.); Campbell, *ib.*, Vol. XVIII., p. 185, 1919 (N.T.).
- Melithreptus vinitinctus* De Vis, Proc. Roy. Soc. Queensland, Vol. I., pt. III., p. 159, (after Sept.) 1884 : Kimberley, Mouth of Norman River, Queensland.
- Melithreptus lunulatus* (subspecies) *chloropsis* Campbell, Nest and Eggs Austr. Birds, Vol. I., p. 361, 1901.
- Melithreptus whitlocki* Mathews, Bull. Brit. Orn. Club, Vol. XXV., p. 24, Nov. 30th, 1909 : Wilson's Inlet, South-west Australia.
- Melithreptus lunatus lunatus* Mathews, Nov. Zool., Vol. XVIII., p. 391, 1912; *id.*, List Birds Austr., p. 259, 1913; Belcher, Birds Geelong, p. 326, 1914.
- Melithreptus lunatus adalaidensis* Mathews, Nov. Zool., Vol. XVIII., p. 391, Jan. 31st, 1912 : Adelaide, South Australia; *id.*, List Birds Austr., p. 259, 1913.
- Melithreptus lunatus whitlocki* Mathews, Nov. Zool., Vol. XVIII., p. 391, 1912; *id.*, List Birds Austr., p. 259, 1913.
- Melithreptus lunatus chloropsis* Mathews, Nov. Zool., Vol. XVIII., p. 391, 1912; *id.*, List Birds Austr., p. 259, 1913.
- Melithreptus lunatus vinitinctus* Mathews, Nov. Zool., Vol. XVIII., p. 392, 1912; *id.*, List Birds Austr., p. 260, 1913.
- Melithreptus lunatus albogularis* Mathews, Nov. Zool., Vol. XVIII., p. 392, 1912; *id.*, List Birds Austr., p. 260, 1913.

* Also spelt *albigularis*.

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Melithreptus lunatus subalbogularis Mathews, Nov. Zool., Vol. XVIII., p. 392, Jan. 31st, 1912: Derby, North-west Australia; *id.*, List Birds Austr., p. 259, 1913.

Melithreptus lunatus gradus Mathews, Austral Avian Record, Vol. I., pt. 2, p. 48, April 2nd, 1912: Melville Island, Northern Territory.

Melithreptus lunatus yorki Mathews, *ib.*, pt. 4, p. 98, Sept. 18th, 1912: Cape York, North Queensland.

DISTRIBUTION. Throughout Australia, but more or less coastal in distribution and not penetrating into the interior. Not Tasmania.

Adult female. Entire top of head, lores, sides of face, sides of neck, a narrow band across the hind-neck, and chin glossy-black with hair-like tips to the feathers on the last; a narrow band of white across the nape; back, rump, upper tail-coverts, scapulars, median, and greater upper wing-coverts, and outer aspect of flight-quills yellowish-green, some of the outer primaries whitish along the outer webs; lesser upper wing-coverts dark brown like the bastard-wing; primary-coverts similar but narrowly edged with yellowish-green; inner-webs of flight-quills dark brown margined with white on the basal portion; tail, the two middle feathers similar to the back but somewhat darker and having the shafts black, the lateral ones blackish fringed on the outer-webs with yellowish-green; throat white; sides of breast black; middle of breast, abdomen, sides of body, thighs, and under tail-coverts pale grey; axillaries and under wing-coverts white like the inner-margins of the flight-quills below, remainder of quill-lining hair-brown; lower aspect of tail similar but paler. Eyes brown, orbits above chalky-white, below slate-grey, feet brown, bill black. Total length 156 mm.; culmen 12, wing 81, tail 63, tarsus 20. Figured. Collected on Wilson's Inlet, South-west Australia, and is *Melithreptus whillocki*.

Adult male. Similar to the adult female.

Adult male. Entire top of head, nape, hind-neck, sides of face, sides of neck, and sides of breast black; a semi-circular narrow band of white on the sides of the crown and across the nape; back, rump, upper tail-coverts, scapulars, median and greater upper wing-coverts, and outer margins of flight-quills yellowish-green; lesser upper wing-coverts, bastard-wing, and two outer primaries blackish-brown like the inner-webs of the primary-coverts; inner-webs of flight-quills hair-brown margined with white on the basal portion; tail hair-brown tinged with yellowish-green; chin, throat, breast, abdomen, sides of body, and under tail-coverts white like the axillaries and under wing-coverts; thighs dusky; under-surface of flight-quills dark brown edged with white; lower aspect of tail hair-brown. Eyes reddish-brown, orbits bluish-grey, feet and tarsi pale leaden-brown, bill black. Total length 128 mm.; culmen 12, wing 71, tail 49, tarsus 19. Figured. Collected on Apsley Straits, Melville Island, Northern Territory, on the 24th of November, 1911, and is the type of *Melithreptus lunatus gradus* and is a subspecies of *Melithreptus albogularis* Gould.

Adult female similar to the adult male.

Immature. Crown of head, fore-head, lores, sides of face, and hind-neck black, divided by a line of white on the sides of the hinder-crown and across the hind-neck, the black on the crown and nape intermixed with earth-brown; mantle, back, upper tail-coverts, scapulars, and outer aspect of the wings greenish-yellow; lesser upper wing-coverts blackish with pale tips to the median series; outer edge of wing more or less white; bastard-wing and primary-coverts inclining to smoke-brown with pale tips to the feathers; inner-webs of flight-quills dark hair-brown margined

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with white ; tail bronze tinged with yellow ; chin, throat, checks, breast, abdomen, sides of body, under tail-coverts, axillaries, and under wing-coverts white, very slightly tinged with pale fawn on the breast ; under-surface of flight-quills hair-brown fringed with white ; lower aspect of tail hair-brown. Eyes brown, orbits leaden-blue, feet and legs pale leaden-blue, bill black, lower base yellow. Collected on Melville Island, Northern Territory, on the 13th of October, 1911.

Immature male. Crown of head and nape blackish-brown ; base of fore-head, lores, sides of face, and sides of neck black ; a short white line on the sides of the crown behind the eye ; mantle, scapulars, and back smoke-brown ; upper tail-coverts bronze-yellow ; upper wing-coverts similar to the back ; outer aspect of flight-quills greenish-yellow, inner-webs hair-brown with whitish margins ; tail hair-brown with greenish-yellow margins to the feathers on the outer-webs ; throat, breast, abdomen, sides of body, under tail-coverts, axillaries, under wing-coverts, and inner-margins of quills below white, remainder of quill-lining pale hair-brown ; lower aspect of tail also pale hair-brown. Eyes brown, feet and legs leaden-grey, bill brown, lower base yellow. Collected on Melville Island, Northern Territory, on the 15th of June, 1912.

Immature female. Crown of head and nape dark cinnamon blotched with black ; base of fore-head, sides of face, and sides of neck black ; a line of white on the sides of the hinder-crown, which extends on to the hind-neck, where it becomes intermixed with black ; mantle, back, rump, upper tail-coverts, and outer aspect of flight-quills yellowish-green ; upper wing-coverts, which are moulting, pale earth-brown ; inner-webs of flight-quills hair-brown margined with white ; tail hair-brown fringed with yellowish-green on the outer-webs ; throat and remainder of the under-surface white, including the breast, abdomen, sides of body, under tail-coverts, under wing-coverts and inner-margins of flight-quills below, remainder of the quill-lining hair-brown as is also the lower aspect of the tail. Eyes brown, orbits leaden-grey, feet and legs leaden-brown, bill black, lower base yellow. Collected on Melville Island, Northern Territory, on the 2nd of October, 1911.

Immature adult. Crown of head, nape, and hind-neck rust-brown more or less intermixed with black ; sides of neck similar but uniform ; an indication of a white line on the sides of the hinder-crown which extends across the hind-neck ; fore-head, lores, and sides of face black ; back, rump, and upper tail-coverts yellowish-green ; lesser upper wing-coverts, bastard-wing, and base of primary-coverts blackish, fringed with yellowish-green at the tips of the last ; the greater series and outer aspect of flight-quills like the back : base of some of the outer flight-quills whitish, the remaining portion blackish margined with white on the inner-webs ; tail-feathers hair-brown tinged with yellowish-green ; chin, throat, and upper breast white ; lower breast, abdomen, sides of body, thighs, and under tail-coverts cream-white ; axillaries, under wing-coverts, and inner margins of quills below white, remaining portion of the flight-quills below blackish-brown ; lower aspect of tail greyish-brown. Eyes brown, orbits bluish-grey, bill dark horn, lower base pale, legs and feet brown. Collected at Wilson's Inlet, South-west Australia, on the 22nd of March, 1910.

Immature female. Crown of head, nape, and sides of face dark cinnamon-brown varied with black on the fore-part of the head, base of fore-head, lores, and fore-part of face ; a narrow white band on the hind-neck which is continued on to the sides of the hinder-crown ; mantle, back, rump, and scapulars moss-green ; upper tail-coverts similar but rather paler ; lesser upper wing-coverts and bastard wing blackish-brown ; greater upper wing-coverts and outer aspect of flight-quills yellowish-green ; inner-webs of the latter dark hair-brown edged with white ; tail hair-brown tinged with yellowish-green ; under-surface white, including the throat, breast, abdomen,

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sides of body, under tail-coverts, under wing-coverts, and inner-margins of flight-quills below; remainder of quill-lining and lower aspect of tail dark hair-brown. Eyes brown, orbits bluish-white, bill dark horn, lower base pinkish, feet and legs dark brown. Collected at Wilson's Inlet, South-west Australia, on the 19th of March, 1910.

Nestling. Entire top of head, hind-neck, sides of neck, sides of face, back, and rump rust-brown; lesser upper wing-coverts dark rust-brown; bastard-wing and outer primary-coverts blackish-brown; median and greater series of wing-coverts and outer aspect of inner primary-coverts and flight-quills yellowish-green, inner webs of the last blackish, margined with white; upper tail-coverts and tail also yellowish-green, somewhat darker on the latter; an indicated line of white on the sides of the hinder-crown which extends round the hind-neck; lores black like the chin and a narrow moustachial streak; throat, breast, abdomen, sides of body, vent, and under tail-coverts white with a very slight tinge of sulphur-yellow; axillaries, under wing-coverts and inner edges of quills below white, remainder of quill-lining hair-brown; lower aspect of tail greyish-brown. Eyes deep brown, orbits whitish, feet pale brown, bill yellow with culmen brown. Collected in the Stirling Ranges, West Australia, on the 18th of October, 1910.

Melithreptus vinotinctus.

The following is a description of the type-specimen of *Melithreptus vinotinctus*, which seems to be not quite adult:—

General colour above olive-yellow, a little more golden-yellow on the rump and upper tail-coverts; wing-coverts dusky ashy-brown, externally like the back, the greater series paler yellow at the tips; bastard-wing dusky-brown, with tiny whitish spots at the tips; primary-coverts and primaries dusky-brown, externally edged with olive-yellow like the back, a little brighter on the outer aspect of the secondaries; tail-feathers dusky-brown, washed with olive-yellow on the outer-webs; crown of head light earthy- or chocolate-brown with an intermediate spot of blackish; base of fore-head, feathers round eye, and ear-coverts, black, continued into a collar encircling the neck, girdling a white collar which extends from the hinder part of the eye round the occiput; cheeks and under-surface of body, white, with a little dusky-blackish patch on the sides of the chest, extending upwards towards the black ear-coverts; thighs pale ashy-brown; under tail-coverts and under wing-coverts white; quills dull ashy-brown, whitish along the inner-web. Total length 112 mm.; culmen 12, wings 67, tail 45, tarsus 16.

Eggs. Two to three eggs form the clutch. A clutch of three taken at Homebush, near Sydney, New South Wales, on the 11th of September, 1892, is of a pale buff ground-colour, finely spotted and speckled, chiefly at the larger end of each egg, with reddish-brown and pale purplish-grey. Rather oval in shape, surface of shell smooth and slightly glossy. 18-19 mm. by 13.

Nest. A small, open cup-shaped structure suspended in the drooping branch of a tree or bush, and often placed a considerable height from the ground. It is usually constructed of strips of bark well matted together with cobwebs and spiders' cocoon bags, and lined with grass, rootlets, soft reddish-coloured bark, and sometimes fur. Dimensions over all about $2\frac{1}{2}$ inches, and from 2 to 3 inches in depth. Egg cavity $1\frac{1}{2}$ inches across by $1\frac{1}{2}$ to nearly 2 inches deep.

Breeding-months. July to November.

Eggs. Two to three eggs form the clutch. A pair taken at Perth, Western Australia, on the 2nd of November, 1899, is of a pale reddish-buff ground-colour, spotted chiefly at the larger end of each egg with reddish-brown and pale slate-coloured markings. Swollen ovals in shape, surface of shell smooth and slightly glossy. 21 mm. by 15.

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Nest. Closely resembles that of *M. l. lunatus*.

Breeding-months. July to December.

Eggs. Two eggs usually form the clutch. A pair taken at Cooktown, North Queensland, on the 22nd of October, 1899, is of a very pale salmon ground-colour, spotted and speckled with reddish-brown, chiefly at the larger end of each egg. Swollen ovals in shape, surface of shell smooth, and possesses very little gloss. 18 mm. by 14.

Nest. Very similar to that of *M. l. lunatus*.

Breeding-months. August to January.

APPARENTLY this species was not named before the drawings made by Watling and his friends (?) were brought to England. Watling's note reads: "It is a lively little bird; frequently contends with small Parrots for flowers."

Caley's observation is "This bird is called *Golden-Eye* by the settlers. I shot it at Iron Cove, seven miles from Sydney, on the Paramatta road."

Gould's notes are rather brief: "The Lunulated Honey-eater is very abundantly dispersed over New South Wales and South Australia, where it inhabits almost every variety of situation, but gives a decided preference to the *Eucalypta* and *Angophoræ* trees, among the smaller branches of which it may be constantly seen actively engaged in searching for insects, which, with the pollen and honey of the flower cups, constitute its food. It is a stationary species, and breeds during the months of August and September; its beautiful, round, cup-shaped, open nest is composed of the inner rind of the stringy-bark or other allied gum-trees, intermingled with wool and hair, warmly lined with opossum's fur, and is suspended by the rim to the small leafy twigs of the topmost branches of the *Eucalypti*. . . . Like the young of *M. chloropsis*, the young birds of this species breed some time before they have attained their green livery; at all events I have found examples breeding in a state of plumage, which I believe to be characteristic of youth."

This last sentence is of interest as apparently it refers to the very distinct species which was confused by most workers up to Gould's time with this one.

Mr. Thos. P. Austin has written me from Cobbora, New South Wales: "As far as this district is concerned the present species is entirely a migratory one, small flocks arriving some years in the spring, many of them being quite in immature plumage, but they never remain here long. In a few weeks they will all have disappeared, then perhaps none will be here again for years."

Captain S. A. White has written me: "*M. lunatus* has a wide range but likes the heavily timbered country where it is to be seen moving about in small parties amongst the tree tops. It has a clear bird note, but when feeding calls in a low and soft voice. A common bird in the Mount Lofty Ranges."

Mr. J. W. Mcllor's notes state "This is the most common *Melithreptus*

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in South Australia, and especially along the Mount Lofty Ranges, where it is to be seen all the year round. I have often watched it at my place "Glenburne," at Stirling West near Mount Lofty, where it frequents the timbered country, clinging to the twigs and leaves as it searches out small insects and scale pests on the wood, for besides being honey-eaters this bird will eat insect life when the flowers become scarce in the winter time; it also feeds its young to a large extent on insects when they are fledgelings. I have also noted it along the Flinders Range further north in South Australia, and on Eyre's and Yorke's Peninsula. It breeds during August, September, October and November, starting in the early months during dry seasons and postponing its nesting habits should the season be late and damp. The birds have a habit of sitting close to their nests especially in winter weather; this prevents the eggs being shaken out by the sway of the hanging branches, as a gale would soon throw out the contents did the bird not stick to its duty."

Mr. F. E. Howe has sent me: "On the 1st of January, 1909, we were lunching in the shade of a sapling that grew in a gully near Ferntree Gully and were much interested in the movements of a pair of these pretty birds. Upon closer observation we discovered them feeding young in a tiny nest, that was fairly high up and suspended out on a horizontal bough. Both parents were engaged in this task and averaged a visit each four minutes. The naked space above the eye of the adult is red, but in the young is of a bluish-green. With perhaps the exception of *Ptilotis chrysops* this Honey-eater is about the liveliest."

Mr. L. G. Chandler has written me: "This little acrobat is perhaps of all our Honey-eaters the most plentiful. At Melton in June, 1908, I saw flocks that numbered many hundreds feeding on the flowering Eucalyptus. A Wattle-bird entering the tree caused a commotion and the smaller Honey-eaters were away in a noisy crowd only to return again in a few moments. I noticed large flocks at Frankston in April. At Olinda, Dandenong Ranges, the young are always found in plenty in the month of February accompanying the parents. The acrobatic performances of young and old are interesting as they appear to hang in any position, and may often be seen performing a half somersault to a lower limb. A nest noticed on New Year's Day at The Basin, Dandenong Ranges, was placed about twenty-five feet from the ground in the leaves at the extremity of a limb in a Eucalyptus sapling. It contained young birds, and both sexes were noticed feeding the young. At Olinda numbers of the birds—young and mature—were seen bathing in the creek. They splashed on the surface while on the wing and seemed to enjoy the bath immensely."

Le Souëf and Macpherson have written from Sydney, the type locality

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of the species: "Is often seen among the eucalypts in the parks, usually betraying its presence by its single plaintive whistle."

Campbell and Barnard wrote of the Cardwell form; "It was refreshing to meet this well-known Honey-eater so far north. As expected, the bird is slightly smaller than southern birds of the same kind. Its well-known lispng notes are exactly similar."

Captain S. A. White wrote of Mallacoota, Victoria: "Fairly numerous amongst the timber. When moving about on the tips of the very high trees they look more like bees than birds. This is a more robust bird in comparison to the South Australian subspecies."

Gould wrote regarding *M. chloropsis*: "This species differs from the *Melithreptus lunulatus* in being of a larger size, and in having the bare space above the eye of a pale green instead of red; in other respects the two birds so closely assimilate, that they are scarcely distinguishable from each other. Individuals in a browner and more dull style of plumage, presenting in fact all the appearances of young birds of the first year, have occasionally been found breeding, a circumstance which has induced many persons to believe them to be distinct; as, however, if I mistake not, I found in New South Wales individuals breeding in a similar style of plumage in company with adults of *M. lunulatus*, I am induced to regard these dull-coloured birds as merely precocious examples of the respective species, affording additional evidence of the extreme fecundity of the Australian birds. [This is interesting as apparently being the first notice of the West Australian form *M. leucogenys* Milligan, a very distinct species. The specimens Gould refers to appear to be now in the British Museum, acquired with Gould's collection after his death.] The *Melithreptus chloropsis* is a native of Western Australia, where it is always found on the upper branches of the different species of *Eucalypti*, feeding upon the honey of the flowers and insects. Its usual note is a rapidly uttered *twit*, but it occasionally emits a harsh, grating, and lengthened cry."

Mr. Tom Carter has written me: "This species appears to be confined to the heavily timbered south-west coastal areas, where it is common. Very few of these birds were observed at Broome Hill, where *Melithreptus leucogenys* meets it and is the more numerous of the species. *Melithreptus chloropsis* was never seen by me in the mid-west (Gascoyne district) and I do not think it occurs so far north, probably somewhere about the Moore River being its northern limit.

Of *M. albogularis* Gould wrote: "This species, which inhabits the northern and eastern parts of Australia, is very abundant on the Coburg Peninsula, and I have received specimens from the east coast. The total absence of any black mark beneath the lower mandible and the pure whiteness

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of the throat serve to distinguish it from every other known species; the colouring of the back, which inclines to rich wax-yellow, is also a character peculiar to it. It is very numerous around the settlement of Port Essington, where it occurs in families of from ten to fifteen in number; it is of a very pugnacious disposition, often fighting with other birds much larger than itself. While among the leafy branches of the *Eucalypti*, which are its favourite trees, it frequently pours forth a loud whistling note, a correct idea of which is not easily conveyed. Like its near allies the sexes present no other external difference than the smaller size of the female; and the young at the same age present a similar style of colouring to that observable in the *M. lunulatus* and *M. chloropsis*, the head and sides of the neck being brown instead of black, and the naked skin above the eye scarcely perceptible. The food consists entirely of insects and the pollen of flowers, in searching for which it displays a great variety of positions, sometimes threading the leaves on the smaller branches, and at others clinging to the very extremities of the bunches of flowers."

Macgillivray has recorded: "*M. albogularis*. First met with in the Gulf country at the Lorraine camp, on the Leichhardt River, on 3rd July, 1910. The call was a single piping whistle like that of a Treecreeper. ♂ testes enlarged; irides reddish-brown; bare skin over the eye white, with a faint greenish tinge; bill black; legs olive-brown. Stomach contents, small insects. This bird was again found at Cape York, but McLennan is of opinion that the bird from this locality shows points of difference. The note is different. Noted at Paira, Jardine River, and at Cape Grenville. Two skins were obtained at Paira, both females. ♀ ovary normal: irides orange-scarlet, eyelids white, bill black, legs fleshy-brown. Stomach contents, honey and small insects."

H. L. White has recorded McLennan's notes from the King River trip as follows: "Pera Head, 4/7/15; Mornington Island, 23 and 30/7/15; Cape Barrow, 25/8/15; and Liverpool River, 21/9/15. A few birds noted at each locality. King River and Port Bradshaw. Numerous in the forest country. Stomach, a small grub and insect remains."

Macgillivray later added: "The White-throated Honey-eater was a common bird on the Claudie. Often in the trees about our camp, especially after heavy rain, when the trees and shrubs of the open forest were alive with birds. One could sit at the door of the tent and watch these birds together with *Glyciphila modesta*, *Monarcha carescens*, *Myiagra concinna*, *Arses lorealis*, *Colluricincla parvissima*, and many others. According to Mr. McLennan, this species is equally common on the Archer River, where he found a pair building a nest on the 6th July; this was finished and contained two

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eggs by the 14th. It was in a paper bark at about 20 feet from the ground."

Ramsay wrote under the name *M. albogularis*: "Common all along the coast line, and for a considerable distance inland, from Brisbane to Cooktown," and then later included it from Derby, writing "This is evidently the northern and western representative of *M. lunulatus*, but is quite distinct from, and must not be confounded with the next very distinct species, *M. lætior* (Gould)."

Mr. Wilson has stated that he has seen two pairs of adults feeding one lot of young ones and also that from one nest he has taken two obvious sets of eggs. Also that the birds built up the sides of the nest after the eggs were heavily incubated.

This fine species has a somewhat complex technical history which can be shortly stated.

The drawings made by Watling and others and sent to England by J. White or some one else came into the possession of Mr. A. Lambert, and perhaps some duplicates were purchased by Francillon or else they were loaned to him. At this time it is difficult to find out exactly as the matter is quite complicated. Anyhow, Vieillot had the examination of some from Francillon and was allowed to copy them in the work known as the "Oiseaux Dorés," and in this instance a name given by Shaw is cited by Vieillot in connection with one of these reproductions.

Well figured in the Lambert or Watling drawings, Latham confused it with a distinct species even as Gould himself later did as related under the species concerned, so that it escaped nomination by Latham.

Vieillot, however, named it as a new species from birds collected by Peron and Lesueur in the Paris Museum and renamed it from a Temminckian intimation. In the first place he named it *Melithreptus albicollis* and to Temminck's bird he gave the inappropriate name of *M. albicapillus*. Probably this was merely a pen slip, and the name was given to the same specimen as was later figured in the *Planches Coloriées d'Oiseaux*, where Temminck named it more correctly *Meliphaga atricapilla*. In the 1822 issue of Lewin's *Birds of New South Wales* this species was figured under the name Black-crowned Honey-sucker on plate 24.

Simultaneously Swainson figured it in his *Zoological Illustrations* where he named it *Meliphaga torquata*, noting that he would not have done so on account of Lewin's figure had his plate not been previously prepared. He also draws attention to Shaw's incorrect account of the colouring of the bird.

Gould was very much attracted by the geographical differentiation

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displayed by Australian birds and very commonly emphasized small observed differences on account of distinct geographical range. He was perfectly justified in such action and the only difference between his usage and ours to-day is that he called his geographical forms species, whereas we call them subspecies. Nevertheless, whatever rank we may give the forms the facts remain that Gould was keen on recognising geographical forms on account of their geographical range and any small difference was sufficient. Some recent workers have overlooked this fact and have been inclined to argue that Gould only considered large differences without regard to geography at all. In the present case Gould differentiated as new species

Melithreptus chloropsis

"Allied to *M. lunulatus*, from which it differs in being of a larger size, and in having the bare space over the eye pale green instead of red. Western Australia."

and

Melithreptus albigularis.

"Rather smaller than *M. lunulatus*, from which it differs in the brighter colouring of the back, and in the total absence of any black on the chin. Northern and Eastern Australia."

Gould of course maintained these as distinct species, but Gadow synonymised the former and ranked the latter as of subspecific value only. In this particular instance, however, even the authority of a British Museum Catalogue could not impress local students of the correctness of the conclusions, and we find Ramsay in 1888 simply ignoring Gadow and allowing three species without comment.

Hall admitted the three but noted against *albigularis* "subsp. of *lunulatus*," but apparently recognising *chloropsis* as a distinct species. It is interesting to know the points Hall gave for the species:

lunulatus "Chin pure white; naked space above eye scarlet; wing 2·8 to 3·1 in."

albigularis "Wing 2·6 to 2·8 in."

chloropsis. "Similar to *lunulatus*; larger and naked space above eye greenish-white."

Campbell arranged them again differently, admitting *M. lunulatus* subsp. *chloropsis*.

subsp. *albigularis*

and stating that the latter two were the western and northern representatives.

Then North, receiving specimens from the Clarence River, counselled the admission of *albigularis* as a distinct species, contending there was no intergradation between it and *lunulatus*, and in addition to the olive-yellow

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upper part and white chin, *albigularis* was also separable by having the bare skin above and behind the eye dull greenish-blue, while in *lunulatus* this is rich orange-scarlet.

The specific value of the differences quoted by North appear problematical, as the olive-yellow of the back is very similar to the greener coloration of *lunulatus*, while the bare skin round the eye coloration seems only a sub-specific feature; thus Gould gave that of his "*chloropsis*" in his diagnosis as pale green instead of red and never mentioned that feature in his "*albogularis*," but in his description of *chloropsis* he wrote "naked space above the eye greenish-white in some, in others pale wine-yellow." This would also constitute a species distinct from the *lunulatus* with red eyelids and ally it to the species *albogularis*.

It will also be noted that the white chin is emphasized as a feature of *albogularis*, but above it will be noted that Hall gave as a specific diagnostic of *lunulatus* "chin pure white." This was incorrect, as typical *lunulatus* has the chin, or better, the interramal space black. This black feathering is of so small a size that it has to be carefully looked for. After careful consideration I am not separating *albogularis* specifically, though I admit that the northern birds are all *white*-throated, pale coloured above, and have *not* red skin round the eye. Rogers' notes of the eye-ring coloration of Derby birds is "whitish"; of Parry's Creek birds "grey-blue"; Macgillivray records from Leiehardt River specimens "white with a faint greenish tinge," and for Cape York birds "white." Campbell and Barnard, who have decidedly written on this subject in the remarks I quote, do not appear to give their own observations of the eye-rim coloration, as follows:

"*Melithreptus lunulatus*. It was refreshing to meet this well-known Honey-eater so far north. We first met it about our camp in the forest of the Kirrama Tableland. As expected, the bird is slightly smaller than southern birds of the same kind. Its well-known lisping notes are exactly similar. . . Of course, we understand that it sometimes takes several subspecies to make one species. But, as field observers of this bird from the north to the south of its habitat, we venture to believe that an important error has been made in classing the following species—*M. albogularis*—a subspecies of *M. lunulatus*. We found these two birds a few miles only apart as 'the Crow flies.' And is it not an axiom, even among subspecificists, that two subspecies of the same species cannot exist in the same locality? This Honey-eater is plentiful in Central Queensland, on the Dawson River, among the hills and gorges of the Expedition Range.

"*Melithreptus albogularis*. These birds were in numbers feasting upon the abundant flowers of the blue gums (*Eucalyptus tereticornis*) and making

WHITE-NAPED HONEY-EATER.

a chorus with their high-pitched 'T-tee, t-tce, t-tee' notes. It was a pleasure to recline under a tree and watch their active movements while left alone; but they were often put to flight by the arrival of larger birds—Leatherheads, etc. As pointed out in the preceding species, *M. albogularis* is distinct from *M. lunulatus*. Amongst other specific distinctions, the naked space above and behind the eye is scarlet or orange in the latter bird, and in the former greenish-blue. These colours are constant in the respective species. In Central Queensland *M. lunulatus* is found in the ranges only, while *M. albogularis* is found on the lower forest country. [Regarding *M. albogularis*, found in Central Queensland, and the northern one, the former appears larger, brighter in colour, and more robust generally; also its note is much stronger and clearer. H. G. Barnard.]”

As just pointed out, *M. albogularis* has not the naked space round the eye greenish-blue constantly, and I do not think that Cairns' birds have this coloration for instance.

A little later Campbell, discussing birds from the King River, Northern Territory, records under the name "*Melithreptus albogularis* Gould. One ♂, 2 ♀ ♀. A plentiful species in Gilbert's time. Birds from North-west Australia (*subalbogularis* Mathews) and Macarthur River (Gulf country) both appear to be similar to type-locality specimens, there being little or no difference in size or in coloration. Field observation points to *lunulatus* and *albogularis* being separate species. They are found in the same faunal locality and are not migrants. For further remarks see (what I have quoted above).”

Here again Campbell does not give the naked space round the eye coloration, and the birds from North-west Australia (Derby) (*subalbogularis* Mathews) have that "whitish," while birds from the Leichhardt River have it also "white with faint greenish tinge," neither "greenish-blue" which Campbell quotes as the constant coloration in the species *albogularis*. I am therefore not giving *albogularis* specific rank at present. Forty years ago De Vis named a new species from Kimberley, mouth of the Norman River, Gulf of Carpentaria, *Melithreptus vinitinctus*. He sent the type for examination to Dr. Sharpe at the British Museum, who recognised that it was an immature bird of the *albogularis* style.

In my "Reference List" in 1912 I reduced *chloropsis*, *vinitinctus* and *albogularis* to subspecific rank under the species *lunatus* as well as my own *Melithreptus whitlocki* which I had described from Wilson's Inlet, South-west Australia, on account of its having the bare skin round the eye white both in summer and winter, i.e., the same colour as Derby and Leichhardt River birds classed under *albogularis*. I did not consider the very variable

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bare-eye space coloration as of great value and did not even record it as a diagnostic feature in the two new subspecies I added at that time.

I thus arranged the species :

Melithreptus lunatus lunatus (Shaw).

New South Wales, Victoria.

Melithreptus lunatus adalaidensis Mathews.

"Differs from *M. l. lunatus* in being lighter above. Adelaide, South Australia."

South Australia.

Melithreptus lunatus whitlocki Mathews.

South-west Australia.

Melithreptus lunatus chloropsis Gould.

West Australia (Perth district).

Melithreptus lunatus vinitinctus De Vis.

Queensland (Gulf of Carpentaria).

Melithreptus lunatus albogularis Gould.

North Queensland.

Melithreptus lunatus subalbogularis Mathews.

"Differs from *M. l. albogularis* in its smaller size and paler coloration. Derby, North-west Australia."

North-west Australia.

When Rogers sent me specimens from Melville Island I named them :

Melithreptus lunatus gradus.

"Differs from *M. l. subalbogularis* in its smaller size and less yellowish on the back."

Afterward Witmer Stone wrote that Gould specimens at Philadelphia at that time regarded as types were from Port Essington. Previously, as Gould stated that the species was described from Northern and Eastern Australia, I had considered Queensland birds as typical. I therefore named the Cape York bird

Melithreptus lunatus yorki.

"Differs from *M. l. albogularis* (from Port Essington) in being more greenish-yellow above, and in having a wider white nuchal band on the back of the head."

In my 1913 "List" I did not allow these last two as I had not Port Essington birds and therefore admitted just as in 1912.

As both Barnard and McLennan agree that the Cape York bird is not the same as the Gulf one, and as Campbell states the King River birds are like Derby ones, it is necessary to allow the whole of the named forms.

If it be still doubtful whether *albogularis* be specific or subspecific the names will need consideration, thus :

WHITE-NAPED HONEY-EATER.

Melithreptus lunatus lunatus,
Melithreptus lunatus adelaidensis,
Melithreptus lunatus whitlocki,
Melithreptus lunatus chloropsis,

and

Melithreptus albogularis albogularis,
Melithreptus albogularis gradus,
Melithreptus albogularis subalbogularis,
Melithreptus albogularis vinitinctus,
Melithreptus albogularis yorki.

Of course the status of *chloropsis* and *whitlocki* would also need adjustment and it would be difficult to argue against their separation also.

The matter is at present complicated by Campbell and Barnard's record of both forms from Cairns, and North's record of the northern form from New South Wales, while I would like to see birds from the west of South Australia.

In the present case the *albogularis* form appears to have exactly the same (perhaps a little wider) distribution as the *lætior* form of the allied *gularis*, and the latter I am now allowing specific value. It is much more highly coloured, but that is really of little value, and it may yet prove that the *albogularis* form showing such slight difference is of equal value to the more flamboyant *lætior*.

MELITHREPTUS GULARIS.

BLACK-CHINNED HONEY-EATER.

(PLATE 512.)

HÆMATOPS GULARIS GOULD, Synops. Birds Austr., pt. I., pl. (17), Jan. 1st, 1837: Interior New South Wales.

Hæmatops gularis Gould, Synops. Birds Austr., pt. I., pl. (17), 1837; *id.*, Proc. Zool. Soc. (Lond.), 1836, p. 144, June 27th, 1837.

Melithreptus gularis Gould, Birds Austr., pt. xx. (Vol. IV., pl. 71), Sept. 1st, 1846; *id.*, Handb. Birds Austr., Vol. I., p. 566, 1865; Ramsay, Proc. Zool. Soc. (Lond.), 1875, p. 597 (N.Q.); *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 190, 1878; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 205, 1884; Ramsay, Tab. List Austr. Birds, p. 14, 1888; Hall, Key Birds Austr., p. 39, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 363, 1901; North, Austr. Mus. Spec. Cat. No. †, Vol. II., p. 193, 1907; Mathews, Handl. Birds Austral., p. 92, 1908; Howe, Emu, Vol. IX., p. 233, 1910 (Vic.); Broadbent, *ib.*, Vol. X., p. 239, 1910 (N.Q.); Ashby, *ib.*, Vol. XI., p. 254, 1912 (S.A.); Cleland, *ib.*, Vol. XII., p. 15, 1912 (Food); Ashby, *ib.*, Vol. XVI., p. 233, 1917 (S.A.); Gilbert, *ib.*, Vol. XIX., p. 28, 1919 (N.S.W.).

Melithreptus gularis gularis Mathews, Nov. Zool., Vol. XVIII., p. 392, 1912; *id.*, List Birds Austr., p. 260, 1913.

Melithreptus gularis loftyi Mathews, Nov. Zool., Vol. XVIII., p. 392, Jan. 31st, 1912: Mount Lofty, South Australia; *id.*, List Birds Austr., p. 260, 1913; S. A. White, South Austr. Ornith., Vol. I., pt. 2, p. 8, 1914.

DISTRIBUTION. New South Wales, Victoria, South Australia, Queensland.

Adult male. Entire top of head, lores, sides of face, and hind-neck black with a semi-circular band of white from the sides of the crown across the nape; mantle and upper tail-coverts lemon-yellow; back and scapulars yellowish-olive; upper wing-coverts blackish-brown with pale margins to some of the feathers; flight-quills similar with whitish margins on the basal portion of the inner-webs; tail also blackish-brown with yellowish margins to some of the feathers on the outer-webs; chin dusky-black with hair-like tips to some of the feathers; fore-neck and breast drab-grey; abdomen, sides of body, thighs, and under tail-coverts fawn-grey; axillaries and under wing-coverts pale buff; under-surface of flight-quills hair-brown with buffy-white margins; lower aspect of tail also hair-brown. Eyes light brown, orbits bright duck-egg green, feet and legs flesh-colour. Total length 144 mm.; culmen 12, wing 90, tail 64, tarsus 22. Figured. Collected on Mt. Lofty, South Australia, on the 24th of July, 1911, and is the type of *Melithreptus gularis loftyi*.



H. Gronvold del.

Witherby & Co

MELITHREPTUS LAETIOR
(GOLDEN-BACKED HONEY-EATER)

MELITHREPTUS GULARIS
(BLACK-CHINNED HONEY-EATER)

MELITHREPTUS VALIDIROSTRIS
(STRONG-BILLED HONEY EATER)

NATIONAL MUSEUM MELBOURNE

BLACK-CHINNED HONEY-EATER.

Adult female similar to the adult male.

The Immature have the black of the head brownish, and the rest of the plumage not so pronounced as the adult.

Eggs. Two to three eggs form the clutch. A pair taken near Grafton, on the Clarence River, New South Wales, on the 30th of December, 1897, is of a pale salmon-pink ground-colour, well spotted and specked with rich reddish-brown and purplish-grey, becoming confluent towards the larger end of each egg. Rounded ovals in shape, surface of shell smooth and rather glossy. 18 mm. by 14. A pair of eggs taken at Kellerberrin, West Australia, on the 2nd of November, 1899, measure 20 mm. by 15.

Nest. Cup-shaped, and chiefly constructed of strips of bark well bound together with cobwebs, etc., and usually suspended in a cluster of foliage on a drooping branch of a tree, frequently a *Eucalyptus*. Lined with hair and fur, etc. Dimensions over all $2\frac{1}{2}$ inches by $2\frac{1}{2}$ to $2\frac{3}{4}$ inches in depth, the egg cavity measuring nearly 2 inches across, by nearly 2 inches deep. Nest usually placed high up.

Breeding-months. July to December.

THIS species was described by Gould before he went to Australia from the "Interior of New South Wales," and his field-notes are the earliest on record: "This species is very abundant in all part of South Australia. It frequents the large *Eucalypti*, and during my stay in Adelaide I frequently saw it on some of the high trees that had been allowed to remain by the sides of the streets in the middle of the city. From this locality it extends its range eastward to Victoria and New South Wales. I killed several specimens in the Upper Hunter district, and observed it to be tolerably numerous on the plains in the neighbourhood of the river Namoi, and that it breeds in these countries is proved by my having shot the young in different stages of growth in all of them. It is a very noisy bird, constantly uttering a loud, harsh, grating call while perched on the topmost dead or bare branch of a high tree, the call being as frequently uttered by the female as by the male. Like the *Melithreptus lunulatus*, it frequents the leafy branches, which it threads and creeps among with the greatest ease and dexterity, assuming in its progress a variety of graceful attitudes. Insects and the pollen of flowers being almost its sole food, those trees abounding with blossoms are visited by it in preference to others."

Mr. J. W. Mellor's notes read: "These birds are not plentiful on the Adelaide plains or anywhere else that I have observed them, being more often seen in odd pairs or at most three or four in company, never going in large companies as '*brevirostris*' often does. They are a very lively and animated bird and always on the move even when seen amongst the topmost branches of the stately gum trees, as this is their favourite feeding place, sucking the honey from the flowers, and all the while clinging to the twigs and leaves,

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sometimes being in an upright position, and more often than not hanging by their stiff claws and feet with head downwards, as they secure the nectar from the flowers with the aid of the brush tongue; like other members of the family they also eat insects and feed their young upon them to a large extent. They are extremely happy birds for, as they hop about in the trees, they are ever singing and calling to each other and it is by this that they are located, as they keep high up in the tree tops, and when flying they also utter their loud musical call at intervals. Their flight is a sharp jerky motion, taken in a number of undulating motions. The note of the Black-chinned Honey-eater is very distinctive, and is a loud full whistle, jerked out in a sharp, short way and generally in a succession of three calls, sometimes uttered while flying and then the call seems to fit in with the undulating flight of the bird. The breeding season has a very wide range, starting in July and ending in December, as I have seen nests in both these months at the Reedbeds and also during the intermediate months; I am of the opinion that when the bird starts early it has a second clutch and so ends late; the nest is very characteristic."

Mr. Thos. P. Austin has written me: "The only time I have seen this species was during a spring, about 1890, in the Geelong district, Victoria. They suddenly arrived in hundreds and a great many of them nested in hedges on the Geelong to Queenscliff road."

Mr. A. G. Campbell wrote me: "The stronghold in Victoria of this species is the gold-bearing Silurian country of the north-east timbered with Ironbark (*Eucalyptus leucoxylon*). A specimen was procured one winter from a flock in the Werribee Plains within 20 miles of Melbourne."

Mr. F. E. Howe writes; "When first shot the colour round the eyes was of a beautiful turquoise-blue, but it rapidly fades. The call of this bird reminded me of that of *Meliphaga phrygia*."

Captain S. A. White has written me: "*M. gularis* is a widely-distributed bird and a common one in the Mount Lofty Ranges, South Australia, and in the plains adjacent to them. Its loud, clear and musical note is often heard in the springtime. It moves about in small parties of five or six to a dozen most of the year, but as nesting-time comes they pair off. The first signs of pairing is to see them mobbing in ten or a dozen in the air, then fluttering to the ground, where they tumble over all in a mass calling loudly all the time."

Captain S. A. White had published a note to which he referred me: "This large *Melithreptus* is a resident at the Reedbeds, where it breeds. Although they as a rule only call in the nesting season or about the time the early rains fall, still they are to be met with silently hunting amongst the gum-tops at almost

BLACK-CHINNED HONEY-EATER.

any time of the year. The call is a very loud one, and very distinctive of the species. The call is invariably made when upon the wing. As a rule these birds fly high and become very active and calling loudly after rain. A small party of five or six will congregate in the top of a high gum, then fly high in the air, fluttering their wings and warbling together. At times they are almost all touching one another, some of them, presumably the males, calling loudly all the time. They seem of a gregarious habit and very often a party of eight or ten are seen moving from one tree-top to another. After writing the above, Dr. Morgan reminded me of a strange trait in this bird's character which I had often noticed but had forgotten, namely, the habit of clinging on to the stems of gum-trees and pulling off the bark in search of insects after the manner of *Climacteris* (Treecreepers)."

Ashby, dealing with the Flinders Range bird, wrote: "Showed some slight differences from the Adelaide form. The nape-ring was whiter and broader; the yellowish-green of rump extends right across the back to the black neck-ring."

I would draw attention to the record of Ramsay in 1875 in his paper on the Birds of Rockingham Bay. Under the name *Melithreptus gularis* he wrote: "This species appears to be plentiful, but not in the immediate vicinity of the coast. It is not rare about Maryborough, and is also found on the Upper Herbert. It has considerable powers of song, which may be heard often at daylight in the morning. While camped on the banks of the Gregory a pair of these birds frequented a Wattle-tree (*Acacia*) near to our 'tent' (a sheet of bark!) and delighted us every morning for many days by pouring out their varied and pleasing song, which often lasted for ten or fifteen minutes without ceasing. I have since heard their song under more comfortable circumstances, and my brother and I at once recognised our old friends."

Recent writers as Campbell and Barnard do not include this species, but Broadbent did, while neither Ramsay nor Broadbent record *M. lunatus*, which the first-named do.

In the *Emu*, Vol. XIX., p. 28, 1919, a monograph of the Black-throated Honey-eater by P. A. Gilbert was published. This account is one of the best that has yet appeared and the author merits sincere congratulations on the essay. I refer all my readers to the full paper for study but here quote extracts: "The Black-throated Honey-eater is by no means a shy bird, but if one happens to be under a tree wherein it is foraging for insects it descends a branch or two, gives an enquiring look from one side to the other at the intruder, and then, with composure, flies to a neighbouring tree, and there renews its search for food. The notes of this bird are clear, almost clarion, sometimes suddenly changing to shrillness, but always well modulated when thus varied. Its song,

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once learnt, could never be mistaken for that of any other Honey-eater, nor is it possible to render in words or music its wonderful versatility and variability of song. It is really thrilling to hear the notes of these birds ringing out from the topmost flowering branches of a lofty old gum-tree—a song indicative of a superabundance of vigour. This volume of sound, emanating from these virtual feathered mites, is a true manifestation that the vernal period has arrived, and an indication of an annual event of great moment to the species. At no other time of the year do they appear in such good song as that attained in early spring. As the spring months retreat one by one their notes become correspondingly subdued until autumn finds them almost without a note. From January to April they may be seen flying around in small flocks of from four to eight, which are probably made up of one or two families. During May they gradually disperse for mating, and by the time June arrives they have paired up, and during this month their notes begin to increase in extent and volume. July usually finds them busily engaged settling on a suitable breeding-haunt, and from then on to December their whole energies are utilised in, and concentrated upon, efforts to bring forth successfully one or more broods, according as to whether the season favours them or not. The male is pugnacious in the extreme, and nothing in the feathered tribe is too small or too large to mix himself up with. All and sundry are cleared from the precincts of his domain. As is noticeable among other Honey-eaters, its flight is undulatory, that is to say, a succession of beats raises the body, then the wings are momentarily held to the sides and the body drops, to be raised again by another succession of beats, and so on. When approaching an alighting place they reach it with a sudden upward movement, which makes it very difficult to follow them at nesting-time. They are vigorous fliers, and when flying together in pairs or in flocks a softened ‘Tsut-tsut’ is emitted by one and answered by the other. Is mostly met with in open forest comprised of smooth-barked gums, stringy-barks, iron-barks, and tea-trees, interspersed with clumps of box-trees and saplings. It is in one of these box-tree clumps that they generally select a position to nest. The food covers a wide range in nectar and in insects. The former is sipped up from any blossom at hand, while the latter are chiefly comprised of saw-fly larvæ (*Terithredinidæ*) and Paropsis grubs (*Chrysomelidæ*) which abound in the box saplings. Moths and small beetles are nipped up from the blossom, or whilst they are on the wing they swoop down or dart at any insect that comes their way, securing it with the greatest precision. These tactics are most noticeable when they are feeding fully-fledged young. It may here be said that the eating of insects by this Honey-eater is of infinite advantage economically to man, for every now and then some insect forsakes the forest and the scrub to take up habitation on the farm or field.”

BLACK-CHINNED HONEY-EATER.

I deal with the allied species *lætior* and *validirostris* in the succeeding pages, but here note that the recognition of these leaves *M. gularis* with comparatively a restricted range and only two subspecies, as

Melithreptus gularis gularis Gould.

New South Wales; Victoria (?) Queensland.

Melithreptus gularis loftyi Mathews.

"Differs from *M. g. gularis* in its paler coloration above, although as dark on the under-surface. (Mount Lofty) South Australia.

South Australia.

MELITHREPTUS LÆTIOR.

GOLDEN-BACKED HONEY-EATER.

(PLATE 512.)

MELITHREPTES LÆTIOR Gould, Ann. Mag. Nat. Hist., Ser. IV., Vol. XVI., p. 287, Oct. 1st, 1875: "Lake Eyre District."

Melithreptes lætior* Gould, Ann. Mag. Nat. Hist., Ser. IV., Vol. XVI., p. 287, Oct. 1st, 1875.

Melithreptus lætior Gould, Birds New Guinea, pt. II. (Vol. III., pl. 40), Jan. 1st, 1876; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 191, 1878; *id.*, *ib.*, Ser. 2, Vol. I., 1886, p. 1,093, 1887 (N.W.A.); *id.*, Tab. List Austr. Birds, p. 14, 1888; Hall, Key Birds Austr., p. 39, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 368, 1901; Hall, Emu, Vol. I., p. 101, 1902 (N.W.A.); Carter, *ib.*, Vol. II., p. 82, 1902 (N.W.A.); *id.*, *ib.*, Vol. III., p. 91, 1903 (N.W.A.); North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 195, 1907; Mathews, Handl. Birds Austral., p. 92, 1908; Whitlock, Emu, Vol. VIII., p. 183, 1909 (W.A.); Mathews, *ib.*, Vol. IX., p. 62, 1909 (N.W.A.); Crossman, *ib.*, Vol. X., p. 112, 1910 (N.W.A.); Hill, *ib.*, p. 284, 1911 (N.W.A.); *id.*, *ib.*, Vol. XII., p. 259, 1913 (Central Australia); Macgillivray, *ib.*, Vol. XIII., p. 176, 1914 (N.Q.); Barnard, *ib.*, p. 209 (N.T.); *id.*, *ib.*, Vol. XIV., p. 48, 1914 (N.T.); Macgillivray, *ib.*, Vol. XVII., p. 204, 1918 (N.Q.); Campbell, *ib.*, Vol. XVIII., p. 4, 1918.

Melithreptus carpentariana Campbell, Emu, Vol. IV., p. 71, Oct. 1st, 1904: Homestead, Campaspe River, Queensland; Hall, Key Birds Austr., 2nd ed., p. 113, 1906; Mathews, Handl. Birds Austral., p. 92, 1908.

Melithreptus gularis lætior Mathews, Nov. Zool., Vol. XVIII., p. 392, 1912; *id.*, List Birds Austr., p. 260, 1913.

Melithreptus gularis coongani Mathews, Nov. Zool., Vol. XVIII., p. 392, Jan. 31st, 1912: Coongan River, Mid-west Australia; *id.*, List Birds Austr., p. 260, 1913.

Melithreptus gularis ingrami Mathews, Nov. Zool., Vol. XVIII., p. 393, Jan. 31st, 1912: Inkerman, Queensland; *id.*, List Birds Austr., p. 260, 1913.

Melithreptus gularis carpentarianus Mathews, Nov. Zool., Vol. XVIII., p. 393, 1912; *id.*, List Birds Austr., p. 260, 1913.

Melithreptus lætior northi Mathews, Austral Av. Rec., Vol. V., pts. 2-3, p. 37, Feb. 21st, 1923: Western Northern Territory.

* Correctly spelt *Melithreptus* by other authors quoted.

GOLDEN-BACKED HONEY-EATER.

DISTRIBUTION. Northern Australia, ranging westward as far south as the Exmouth Gulf, Central to Lake Eyre District, and on the East to Inkorman, Queensland.

Adult male. Crown of head, lores, sides of face, and hind-neck blackish with a semi-circular band of white from the sides of the crown across the nape; sides of neck, back, scapulars, rump, and upper tail-coverts yellow, being brighter on the last; wings pale brown with white margins to the inner-webs of the flight-quills; tail-feathers similar with yellowish edges to the outer webs; cheeks and sides of throat white; chin blackish with hair-like tips to the feathers; middle of throat grey, becoming fawn-grey on the breast and sides of body; abdomen, lower-flanks, thighs, and under tail-coverts cream-white like the axillaries, under wing-coverts, inner margins of flight-quills below; remainder of quill-lining and lower aspect of tail pale glossy-brown. Bill black, eyes brown, orbits green, legs and feet light brown. Total length 158 mm.; culmen 13, wing 85, tail 63, tarsus 22. Figured. Collected on the Coongan River, Northern Mid-west Australia, on the 1st of July, 1908, and is the type of *Melithreptus gularis coongani*.

Adult female similar to the adult male.

Adult male. Fore-head, crown, lores, sides of face, ear-coverts, and a narrow line round the hind-neck black; a narrow white line from the hinder-part of the eye encircling the hinder-crown and dividing the black on the hind-neck; back, rump, and upper tail-coverts olive-yellow, rather more yellow on the latter; entire wings pale brown; tail pale brown, the feathers fringed with greenish-yellow on the outer-webs; chin and middle of throat dark brown or blackish; a line on each side of the throat white; remainder of the under-surface dusky-white including the under wing-coverts and under tail-coverts. Total length 149 mm.; culmen 16, wing 91, tail 64 (imperfect), tarsus 19. Collected on the Catherine River, North Queensland (specimen in full moult), and is the type of *M. carpentariana* Campbell.

In the Immature the black of the head is brownish.

Nest. Cup-shaped, built in the drooping leafy twigs of a *Bauhinia*, about ten feet from the ground." (North.)

Eggs. "Oval in form, gently tapering towards the smaller end, the shell being smooth and slightly glossy, and is of a pale fleshy-buff ground-colour, which gradually passes into a warm reddish-buff on the larger end, where there are spots and blotches of a slightly darker hue, intermingled with underlying markings of faint purplish-buff. 22 mm. by 16." (North.)

GOULD described this species from the Lake Eyre District and Captain S. A. White has written me: "The writer first met with this bird at the foothills of the McDonnell Ranges," quoting: "We met with this handsome bird in the foliage of the young gums at Running Waters, on the Finke. We were attracted by their call, which resembles [that of] *M. gularis*. A small party was busily engaged searching for insects amongst the gum-tops, but they had little peace from the attacks of *Ptilotis leilavalensis*. Even after a specimen had been shot, two *Ptilotis* followed it to the ground, viciously attacking it all the time."

Hill has also noted it from Central Australia, so there seems to be no reason for not recognising that as the correct type locality.

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Whitlock, writing of the Birds on the Pilbarra Goldfield, Western Australia, wrote: "This beautiful species was a local bird on the upper Coongan, where it occurs in small family parties, even during what must be its breeding-season. On the de Grey it was rare. I also obtained an example at a large creek not far from the Shaw River. Its favourite haunt is clumps or a series of eucalypt saplings, and here its remarkably loud call-note inevitably attracts attention. I have no hesitation in stating that the call of this species could be distinguished at a distance of 1,000 yards on a calm morning. It is a fussy, active bird, hurrying hither and thither without apparent aim or object. I must confess I could make nothing out concerning its breeding habits. I spent hours in watching it, but I saw no signs of building material being conveyed to a nest or food to a young bird. It is possible it may be a late breeder, and that I left the Coongan just before operations had commenced. The gums were on the point of flowering, and it is possible this Honey-eater may defer operations until such time as they are in full bloom."

Mr. J. P. Rogers wrote me: "Of *M. lætior* a few were seen every day at Marngle Creek and the same at Mungi. In West Kimberley occasionally these birds are numerous. From the latter place the skin above and behind eye is yellowish-green, shading to blue behind. This colour is not so bright as in birds procured at Derby."

Rogers' previous notes from Derby were recorded by Hall. "For the first time (4/3/00) I have seen this species in large numbers—generally in pairs before. While visiting a gorge in the Grant Range I found them in nearly every tree in bloom. Being shy and flying continuously from tree to tree, I had difficulty in securing the skins for identification. In the trees the yellow back is not so conspicuous as one is led to believe by handling a skin. The only note I heard was a short, rather musical one, with a strange grating sound through it."

Mr. Tom Carter has sent me the following account: "*Melithreptus lætior*, the Golden-backed Honey-eater, is given in your 1912 'List' as occurring ONLY in the Northern Territory. On June 18th, 1902, I was fortunate enough to secure two males on the west side of the Exmouth Gulf, where they appeared to be breeding. A third bird was shot, but lost in the dense undergrowth. Several others were seen at the same place, all feeding on the honey contained in the yellow pendent blossoms of Cork-trees. They were very shy, and active in their movements. My attention was first attracted to them by their harsh *grating* notes, which somewhat resemble the song of *Petræca goodenovii*." The naked skin round the eyes of those shot was, immediately after the birds were picked up, gamboge-yellow in front of the eye, and emerald-green posteriorly, but a few hours afterwards,

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all this skin had faded to dull purple. The bright yellow on the rumps and napes of the birds was of the same shade."

Crossman in his list of Birds seen in and around Broome, North-western Australia, includes: "Golden-backed Honey-eater (*Melithreptus lætior*). Seen on several occasions in the scrub country. It utters a somewhat loud note."

Hill records from Kimberley, North-west Australia: "Flocks of from 12 to 18 birds passed the station on 4th to 28th November, flying south-west. From the latter date to 16th February, 1910, none was seen, but on 17th February and 30th June I frequently saw or heard them in some open forest, but they were generally in parties of two or three pairs, and showed no desire to commence nesting. The notes of this species are similar to those of *M. brevirostris* (Brown-headed Honey-eater) though stronger, and audible at a greater distance."

Macgillivray has written: "First observed in the Gulf country, at Sedan, where specimens were secured on the 23rd October. ♂, testes enlarged; irides brown; skin round the eye bright green, with a tinge of yellow; bill black; legs brownish-yellow. Stomach contents, portions of flowers. On the 25th of the same month this species was noted feeding fully-fledged young. They were plentiful at this camp and at Cloncurry, where they were seen again feeding young birds on the 30th April. In another specimen, secured on the Leichhardt River, the soft parts were as follows: ♂; testes enlarged; irides dark brown, naked skin above eye greenish-yellow, bill brownish-black; legs pale yellowish-brown, feet lighter. Stomach contents, honey and insects." Later he added: "A few Golden-backed Honey-eaters were seen on the Archer River."

Mr. A. J. North wrote me many years ago: "*Melithreptus carpentariana* Campbell is not a species. Specimens from same district have been compared by me with the co-type of *M. lætior*. If it were necessary to separate any form it would be that from the North-west of Australia, which is of a richer golden-yellow; but on the other hand some specimens from the east are indistinguishable from the north-west birds."

This was overlooked as indicating the type-locality of *M. lætior* as hereafter discussed.

The confusion between *M. gularis*, *lætior* and *validirostris* is still existent. Before Gould went to Australia he proposed a new genus *Hæmatops* for three species, the well-known *Certhia lunulata* Shaw and two new ones, *H. validirostris* and *H. gularis*. Simultaneously, but published a few months later, Swainson introduced two new genera for the first two, the last being apparently unknown to him. It was almost immediately pointed out that Vieillot's genus *Melithreptus* was based solely on the first named, so that Gould and Swainson's names become synonymous, while the second Swainson's genus

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was also included, the species being scarcely distinguishable as of specific rank. Moreover, this had been described before either Gould or Swainson by Wagler, but he had used a preoccupied name. Consequently Gould's specific name was preserved.

Forty years afterward Gould described from the Lake Eyre district *Melithreptes lætior*, observing that the collector recorded when alive it had a bright yellow rim round the eye and adding: "Although very closely allied to *M. gularis* Gould this species is altogether a much more finely coloured bird. In size it is slightly larger, and is at once to be distinguished by its white under-surface and the beautiful lemon-yellow of the neck. The ashy shade which pervades the entire lower surface of *M. gularis* is not seen in *M. lætior*."

This was also admitted as a valid species, Ramsay writing in connection with Cairns' collection from Derby: "Dr. Hans Gadow has confused this species with *M. gularis* Gould from which it is very distinct, probably because he has had only a single specimen to judge from. A large series now before me plainly shows that the two species are quite distinct from one another, their size and colouring being unvarying. I have received it from the Norman River and other parts of the interior."

Some years afterward Campbell wrote: "Mr. F. L. Berney forwarded from Homestead, North Queensland, a Honey-eater. . . He . . . other specimens . . . forwarded later. Judging by this material (four skins) there appear grounds for making a new variety, if not subspecies. The new bird most resembles *Melithreptes lætior*, from which it differs in its general darker tone of colouring, and in the bare space round the eye being *greenish-blue* instead of *bright yellow* (Gould) or *greenish-yellow* (Hall-Rogers). It has been stated that *M. lætior* may be only a very fine example of *M. gularis*. *M. gularis* is a much heavier species, and otherwise quite distinct. It has been taken in Victoria, where *M. lætior* is never seen, and appears to be the mainland form of the still larger *M. validirostris* of Tasmania. Mr. A. J. North mentions that *M. lætior* is found in the Gulf district of Northern Queensland, and in the event of the Check List Committee separating the eastern from the western and interior form, I would suggest the name *Melithreptes carpentariana* for the North Queensland bird."

At the time I was preparing my "Reference List" I was reducing all geographical representatives to subspecific rank, making no distinction between geographical species and geographical subspecies. Consequently I regarded all the *gularis* style of bird as constituting one species and arranged them thus:

Melithreptes gularis gularis (Gould).

New South Wales, Victoria.

Melithreptes gularis loftyi Mathews.

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"Differs from *M. g. gularis* in its paler coloration above, although as dark on the under-surface. (Mount Lofty).

South Australia.

Melithreptus gularis lætior Gould.

Northern Territory.

Melithreptus gularis coongani Mathews.

"Differs from *M. g. lætior* in its more pallid coloration, pale yellowish-green above, especially noticeable on the mantle, and is also whiter on the under-surface. Coongan River, North-west Australia."

North-west Australia.

Melithreptus gularis ingrami Mathews.

"Differs from *M. g. lætior* in having more green on the upper-surface, and in being darker below. Inkerman, Queensland."

Mid-Queensland.

Melithreptus gularis carpentarianus Campbell.

North Queensland.

Melithreptus gularis validirostris (Gould).

Tasmania.

In my 1913 "List" I separated the last named specifically, which seems certainly necessary in view of the fact that it was generically separated by Swainson and the genus admitted by Bonaparte, etc.

I admitted the others unchanged, but now revision must be made with the acceptance of the specific value of *M. lætior*, to which four of the above must be added. As the type locality of *M. lætior* is Lake Eyre district this means that Campbell's *M. carpentariana* is synonymous even as North advised me. It will leave the Western Northern Territory bird which I have called *Melithreptus lætior northi*.

The subspecies then will be:

Melithreptus lætior lætior Gould.

Interior of Queensland, Central Australia and
Eastern Northern Territory.

Melithreptus lætior ingrami Mathews.

North Queensland.

Melithreptus lætior northi Mathews.

Western Northern Territory and adjoining
parts of North-west Australia.

Melithreptus lætior coongani Mathews.

Lower North-west Australia.

Order PASSERIFORMES.

No. 637.

Family MELITHREPTIDÆ.

MELITHREPTUS VALIDIROSTRIS.

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(PLATE 512.)

HÆMATOPS VALIDIROSTRIS Gould, Synops. Birds Austr., pt. I., pl. (17), Jan. 1st, 1837 : Tasmania.

Sturnus virescens Wagler, Syst. Avium *Sturnus*, sp. 5 (before Oct.), 1827 : Van Diemen's Land.

Not—

Melithreptus virescens Vieillot, Nouv. Dict. d'Hist. Nat., nouv. ed., Vol. XIV., p. 329, 1817.

Hæmatops validirostris Gould, Synops. Birds Austr., pt. I., Jan. 1837 ; *id.*, Proc. Zool. Soc. (Lond.), 1836, p. 144, June 1837.

Eidopsarus bicinctus Swainson, Classif. Birds, Vol. II., p. 32, July 1837 ; Anim. in Menag., p. 344, Dec. 1837 : Tasmania.

Melithreptus virescens Gray, Genera Birds, Vol. I., p. 128, 1846.

Melithreptus validirostris Gould, Birds Austr., pt. XIX. (Vol. IV., pl. 70), June 1st, 1845 ; *id.*, Handb. Birds Austr., Vol. I., p. 565, 1865 ; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 190, 1878 ; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 206, 1884 ; Legge, Papers Proc. Roy. Soc. Tasm., 1886, p. 240, 1887 ; Ramsay, Tab. List Austr. Birds, p. 14, 1888 ; Hall, Key Birds Austr., p. 39, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 364, 1901 ; Littler, Emu, Vol. II., p. 169, 1902 ; A. G. Campbell, *ib.*, p. 207, 1903 ; *id.*, Vol. III., p. 163, 1904 ; Fletcher, *ib.*, Vol. IV., p. 15, 1904 ; A. G. Campbell, *ib.*, p. 123, 1905 ; North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 185 ; Mathews, Handl. Birds Austral., p. 92, 1908 ; Littler, Handb. Birds Tasm., p. 55, 1910 ; Fletcher, Emu, Vol. XI., p. 106, 1911 ; Dove, *ib.*, Vol. XII., p. 49, 1912 ; Mellor and White, *ib.*, p. 163, 1913 ; Mathews, List Birds Austr., p. 261, 1913 ; Dove, Emu, Vol. XV., p. 234, 1916 ; Lord, *ib.*, Vol. XIX., p. 106, 1919.

Melithreptus gularis validirostris Mathews, Nov. Zool., Vol. XVIII., p. 393, 1912.

Melithreptus gularis kingi Mathews, Austral Avian Record, Vol. II., pt. 7, p. 131, Jan. 28th, 1915 : King Island.

Melithreptus validirostris validirostris Mathews, *ib.*

DISTRIBUTION. Tasmania, King Island and Flinders Group only.

Adult female. Entire top of head, nape, hind-neck and sides of face black with a semi-circular band of white from the sides of the crown across the nape ; mantle and

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sides of neck drab-grey; back, rump, and upper tail-coverts yellowish-green; upper wing-coverts and outer aspect of quills drab-brown; bastard-wing, primary-coverts, and inner-webs of flight-quills blackish with buff margins to the last; middle tail-feathers similar to the back but somewhat darker and having black shafts, the lateral ones hair-brown fringed with yellowish-green on the outer-webs of some of the feathers; chin black with hair-like tips to the feathers; cheeks white; throat pale grey becoming somewhat darker on the breast; abdomen, sides of body, thighs, and under tail-coverts ochreous-brown; axillaries, under wing-coverts, and margins of flight-quills below cinnamon-buff rather brighter on the last, remainder of quill-lining dark brown; lower aspect of tail greyish-brown. Eyes crimson, orbits turquoise, feet dark orange, bill black. Total length 156 mm.; culmen 13, wing 80, tail 65, tarsus 21. Figured. Collected on King Island, Bass Straits, on the 24th of April, 1914.

Adult male similar to the adult female.

Immature male. Crown of head, nape, lores, and sides of face black extending in a narrow band across the hind-neck; sides of crown dull white extending in a yellowish-green band across the base of the nape; back, rump, scapulars, upper tail-coverts, and outer fringes of tail-feathers bronze-green, inner-webs of the last dark hair-brown; lesser and median upper wing-coverts dusky-brown, like the bastard-wing and primary-coverts; outer aspect of flight-quills similar to the back; inner-webs dark hair-brown with buff margins; chin black with hair-like tips to the feathers; middle of throat lead-grey; cheeks yellowish-white; upper breast slate-grey, becoming smoke-brown on the abdomen, sides of body, flanks, and under tail-coverts; middle of lower abdomen whitish; axillaries and under wing-coverts buffy-white like the margins of the quills below, remainder of quill-lining dark brown with a greyish gloss; lower aspect of tail similar but paler. Eyes hazel, orbits orange, bare skin green, bill orange, feet yellowish-flesh. Collected on Brown's River, Tasmania, on the 27th of February, 1909.

Immature male. Top of head, sides of face, fore-head, and a band across the hind-neck black; sides of hinder-crown yellowish-white which is continued in a band across the hind-neck where it becomes greenish-yellow; back, scapulars, and outer aspect of wings bronze-brown, the grey bases of the feathers on the mantle show through and impart a greyish tinge; inner-webs of flight-quills dark brown with buffy-white margins; rump and upper tail-coverts greenish-bronze; tail bronze-brown; cheeks and sides of throat yellowish-white; chin black with hair-like tips to the feathers; throat, breast, abdomen, sides of body, thighs, and under tail-coverts dull lead-grey with a tinge of yellow on the middle of the abdomen; axillaries, under wing-coverts, and margins of the flight-quills below yellowish-buff, remainder of the quill-lining dark brown; lower aspect of tail similar but rather paler. Collected at St. Mary's, Tasmania, on the 6th of September, 1884.

Eggs. Three eggs usually form the clutch. A clutch of three eggs taken at Montague, Tasmania, on the 3rd of October, 1895, is of a pale pinkish-white ground-colour, spotted and speckled with dark reddish-brown and purplish-grey, the markings being confined chiefly to the larger end of each egg. Rounded ovals in shape, surface of shell fine and smooth, but almost devoid of gloss. 21-22 mm. by 16-17.

Nest. Is a deep cup-shaped structure, composed of bark, grasses, and wool, and lined with the soft portions of grass, etc. Generally suspended from the drooping branches of a tree, and well up from the ground. Measurements over all: 4 inches across by $3\frac{1}{2}$ inches in depth.

Breeding-months. July to December.

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GOULD wrote of *M. validirostris*: "This bird, the largest species of the genus yet discovered, is a native of Tasmania, and so universally is it distributed over that island that scarcely any part is without its presence. The crowns of the highest mountains as well as the lowlands, if clothed with Eucalpyti, are equally enlivened by it. Like all the other members of the genus, it frequents the small leafy and flowering branches; it differs, however, from its congeners in one remarkable character, that of alighting upon, and clinging to, the surface of the boles of the trees in search of insects. I never saw it run up and down the trunk, but merely fly to such parts as instinct led it to select as the probable abode of insects. . . The song consists of a couple of notes, and is not remarkable for its melody."

Mr. Frank Littler has written me: "Somewhat unevenly distributed over the island of Tasmania. In some districts I have found it fairly plentiful, while in others it was absent, though the districts as far as I could judge were well suited for it. The class of country mostly favoured by this species is heavily timbered tracts, the trees most eucalyptus. Although country with an abundance of heavy undergrowth is often resorted to, it is not as a rule greatly favoured by this species. The diet consists principally of insects which are mostly procured from under the bark and among the leaves and blossoms. Honey is not despised as it may often be seen probing the corollas of the eucalypt blossoms."

Mr. J. W. Mellor has sent me a note: "I have seen these birds in various places in Tasmania, also on King Island and Flinders Island in Bass Straits; they love the tall tree-tops and can hardly be distinguished amongst the leaves and thick foliage, but they at times descend to the lower bushy trees; while on Flinders Island during Nov. 1912 I noted them in the tall Van Diemen's Land blue gums and secured several specimens. I met with it at Mount Arthur in the north and Mt. Wellington in the south of Tasmania."

Captain S. A. White has written me: "This bird is to be met with in almost all the thick forest country of Tasmania. It prefers the bush to the open country. The writer met with the bird on Flinders Island where it was nesting. The nest was placed in the thick young shoots of a big gum, it was of the usual cup-shape and was composed of strips of bark lined with rootlets and dry grass and contained three young. I watched this pair of birds for some time and it was remarkable how they hung to the stems of the big trees pulling off the bark in search of insects, their movements being so much like those of *Climacteris*. The bird has a loud note and is quarrelsome, being very much like *M. gularis*."

A. G. Campbell writing of the Birds of King Island included this species: "This powerfully built bird is ever on the move, in parties of five or six,

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among the gum trees along the ridges and in the valley of the Pass River, where alone on the island it is found. Not only does it search among the leafy tree-tops for its food, but it can be seen climbing about the loose shreds of bark, and prying into every crevice. It has a harsh cry." Later: "The King Island specimen, as a subsingular form, is noticeably the larger, particularly in the bill, which is .75 inch in length against .6 in the female Tasmanian bird; however, the sexes differ slightly in the measurements of the bill. In the young bird of this species the mantle is tinged with greenish-olive; the cheeks, lunar mark behind the head from eye to eye, and the centre of abdomen are light yellow, and the bill-base and legs are straw-yellow in colour, the black head, ear coverts, and throat remaining prominent. In the adult the cere is of a sea-green colour."

Mellor and White from Flinders Island noted: "These birds were met with in the large timber on mountain sides, and were in small companies from three to six, flying from tree to tree. Unlike that of *M. gularis*, of the mainland, their call is feeble and not often repeated."

As recorded in connection with the preceding species I at one time classed this species as a subspecies of *gularis*, whereas earlier workers had generically separated them. I believe the middle course to be the correct one and therefore reinstated it specifically in my 1913 "List" and later added

Melithreptus validirostris kingi.

"Differs from *M. v. validirostris* in having sides of the body darker, the chest greyer and the wing longer. King Island,"
and now allow:

Melithreptus validirostris validirostris (Gould)
Tasmania.

Melithreptus validirostris kingi Mathews.
King Island).

MELITHREPTUS ATRICAPILLUS.

BROWN-HEADED HONEY-EATER.

(PLATE 511.)

CERTHIA ATRICAPILLA Latham, Index Ornith. Suppl., p. xxxvii., (after May) 1801: New South Wales, based on Watling painting No. 105.

Black-headed Creeper Latham, General Synops. Birds, Suppl. II., p. 167, 1801.

Certhia atricapilla Latham, Index Ornith. Suppl., p. xxxvii. 1801; Mathews, Austral Avian Record, Vol. III., p. 25, pl. iv., 1915.

Melithreptus atricapillus Vieillot, Nouv. Dict. d'Hist. Nat., nouv. ed., Vol. XIV., p. 324, 1817; Mathews, Nov. Zool., Vol. XVIII., p. 19, 1911.

Meliphaga brevirostris Vigors and Horsfield, Trans. Linn. Soc. (Lond.), Vol. XV., p. 315, Feb. 17th, 1827: New South Wales.

Melithreptus brevirostris Gould, Handb. Birds Austr., Vol. I., p. 570, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 190, 1878; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 207, 1884; Ramsay, Tab. List Austr. Birds, p. 14, 1888; Hall, Key Birds Austr., p. 39, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 364, 1901; *id.*, Emu, Vol. III., p. 248, pl. xvi., 1904; North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 190, 1907; Batey, Emu, Vol. VII., p. 9, 1907 (Vic.); Mathews, Handl. Birds Austral., p. 92, 1908; Hall, Emu, Vol. IX., p. 129, 1910 (S.A.); Cleland, *ib.*, p. 224 (Food); Howe, *ib.*, p. 233 (Vic.); Ingle, *ib.*, Vol. X., p. 124, 1910 (Vic.); Cleland, *ib.*, Vol. XI., p. 90, 1911 (Food); Sullivan, *ib.*, p. 115 (Mallee); S. A. White, *ib.*, Vol. XII., p. 4, 1912 (S.A.); Cleland, *ib.*, p. 15 (Food); Wilson, *ib.*, p. 38 (Vic.); Ashby, *ib.*, p. 47 (Mallee); S. A. White, *ib.*, pp. 127-129, 1912 (S.A.); *id.*, *ib.*, p. 180, 1913 (Mallee); *id.*, *ib.*, Vol. XIII., p. 128, 1914 (S.A.); Howo and Tregellas, *ib.*, Vol. XIV., p. 79, 1914 (Mallee); Purnell, *ib.*, Vol. XV., p. 43, 1915 (Vic.); S. A. White, *ib.*, Vol. XVIII., p. 24, 1918 (S.A.); Cleland, *ib.*, p. 282, 1919; Le Souëf and Macpherson, *ib.*, Vol. XX., p. 90, 1920 (N.S.W.).

Melithreptus breviceps De Vis, Proc. Roy. Soc. Queensl., Vol. I., pt. III., p. 159 (after Sept.), 1884: *nom. nudum*; slip for *brevirostris*.

Melithreptus leucogenys Milligan, Emu, Vol. II., p. 161, Jan. 1st, 1903: Stirling Ranges, South-west Australia; *id.*, *ib.*, Vol. III., pp. 11, 13, 18, 1903; *id.*, *ib.*, p. 225, 1904; *id.*, *ib.*, Vol. IV., pp. 6-10, 1904; Mathews, Handl. Birds Austral., p. 92, 1908; Gibson, Emu, Vol. IX., p. 75, 1909; Crossman, *ib.*, p. 89; Whitlock, *ib.*, Vol. X., p. 311, 1911; Chandler, *ib.*, Vol. XIII., p. 43, 1913 (Vic.); Alexander, *ib.*, Vol. XX., p. 167, 1921.

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- Melithreptus magnirostris* North, Records Austr. Mus., Vol. VI., p. 20, June 15th, 1905 : Kangaroo Island ; Hall, Key Birds Austr., 2nd ed., p. 113, 1906 ; A. G. Campbell, Emu, Vol. V., p. 143, 1906 ; North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 193, 1907 ; Mathews, Handl. Birds Austral., p. 92, 1908 ; S. A. White, Emu, Vol. XII., p. 269, 1913.
- Melithreptus atricapillus atricapillus* Mathews, Nov. Zool., Vol. XVIII., p. 393, 1912 ; *id.*, List Birds Austr., p. 261, 1913.
- Melithreptus atricapillus submagnirostris* Mathews, Nov. Zool., Vol. XVIII., p. 393, Jan. 31st, 1912 : (Ringwood) Victoria ; *id.*, List Birds Austr., p. 261, 1913 ; Belcher, Birds Geelong, p. 328, 1914.
- Melithreptus atricapillus augustus* Mathews, Nov. Zool., Vol. XVIII., p. 393, Jan. 31st, 1912 : Port Augusta, South Australia ; *id.*, List Birds Austr., p. 262, 1913 ; S. A. White, Emu, Vol. XVIII., p. 198, 1919 (S.A.).
- Melithreptus atricapillus pallidiceps* Mathews, Nov. Zool., Vol. XVIII., p. 394, Jan. 31st, 1912 : 90 Mile Desert, South Australia.
- Melithreptus atricapillus magnirostris* Mathews, *ib.* ; *id.*, List Birds Austr., p. 261, 1913.
- Melithreptus atricapillus insularis* Mathews, Nov. Zool., Vol. XVIII., p. 394, Jan. 31st, 1912 : King Island ; *id.*, List Birds Austr., p. 261, 1913.
- Melithreptus atricapillus leucogenys* Mathews, Nov. Zool., Vol. XVIII., p. 394, 1912 ; *id.*, List Birds Austr., p. 262, 1913.
- Melithreptus atricapillus subleucogenys* Mathews, Nov. Zool., Vol. XVIII., p. 394, Jan. 31st, 1912 : Lake Dundas, South-west Australia ; *id.*, List Birds Austr., p. 262, 1913.
- Melithreptus atricapillus minnie* Mathews, Austral Avian Record, Vol. I., pt. 8, p. 192, March 20th, 1913 : Minnie Downs, Queensland ; *id.*, List Birds Austr., p. 261, 1913.
- Melithreptus atricapillus mallee* Mathews, Austral Avian Record, Vol. I., pt. 8, p. 192, March 20th, 1913 : Mallee, Victoria ; *id.*, List Birds Austr., p. 261, 1913.

DISTRIBUTION. Southern Australia northwards to Minnie Downs ; Central Queensland and westward to inland from Perth, West Australia ; King Island and Kangaroo Island.

Adult male. Entire top of head, lores, sides of face and nape dusky-brown with a pale semi-circular band from the sides of the crown across the nape ; sides of neck, hind-neck, back, scapulars, rump, and upper tail-coverts dull olive-green ; wings dark brown with pale margins to the feathers, including the inner-webs of the flight-quills ; tail hair-brown with clive-green margins to the outer-webs and pale edges to the inner ones ; cheeks whitish ; chin dusky with hair-like tips to the feathers ; throat, breast, upper abdomen, and sides of body drab-grey, tinged with fawn-colour on the lower abdomen, thighs, lower flanks, and under tail-coverts ; axillaries and under wing-coverts pale buff ; under-surface of flight-quills dark brown with whitish margins ; lower aspect of tail hair-brown. Bill black, feet light brown, eyes brown, bare space round eye deep yellow. Total length 124 mm. ; culmen 10, wing 71, tail 56, tarsus 19. Figured. Collected on Warunda Creek, Eyre's Peninsula, South Australia, on the 24th of August, 1911.

Adult female. Similar to the adult male.

Adult. Top of head, nape, and side of face dark brown, the feathers on the crown abraded and showing pale shaft-lines ; an indicated line of white on the sides of the hinder-

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crown which extends across the nape; mantle, back, rump, and upper tail-coverts dull olive-green becoming brighter on the last; upper wing-coverts and outer margins of innermost secondaries pale brown; outer webs of flight-quills edged with greyish-white, the inner ones blackish-brown with pale margins; tail hair-brown somewhat paler on the outer feathers; under-surface, including the throat, breast, abdomen, and sides of body dusky ash-grey becoming darker on the thighs and under tail-coverts; axillaries and under wing-coverts buff; flight-quills below dark brown with pale buff margins; lower aspect of tail similar to its upper-surface but paler. Eyes straw, feet and legs flesh, bill horn. Total length 147 mm.; culmen 12, wing 73, tail 58, tarsus 18. Collected at Mt. Morrison, King Island, Bass Straits, on the 27th of December, 1897, and is the type of *M. a. insularis*.

Adult female. Top of the head, including the fore-head and nape dark brown with olive-grey fringes to the feathers; hind-neck, back, and scapulars olive-green, becoming yellowish-green on the rump and upper tail-coverts; upper wing-coverts dark brown margined with grey; bastard-wing uniform dark brown; flight-quills also dark brown edged with grey on the outer-webs and margined with white on the inner ones; tail likewise dark brown fringed with yellowish-green on some of the feathers and with grey on others; lores and hind-face uniform dark brown; cheeks and a line behind the eye dull white; chin and middle of throat dusky with hair-like tips to the feathers; fore-neck, breast, and sides of neck drab-grey; abdomen, sides of body, thighs, and under tail-coverts fawn-grey; axillaries and under wing-coverts pale buff; under-surface of flight-quills dark brown margined with white; lower aspect of tail greyish-brown with whitish margins to some of the feathers. Eyes dark brown, feet yellowish-brown, bill brownish, throat orange. Total length 140 mm.; culmen 10, wing 70, tail 56, tarsus 19. Collected at Coonalpyn, 90 Mile desert, South Australia, on the 17th of May, 1911, and is the type of *M. a. palliceps*.

Adult male. Crown of head, fore-head, and nape dark brown with dark olive margins to the feathers; a white line behind the eye which fades to buff on the sides of the nape and extends in a slightly indicated collar across the hind-neck where it becomes an obsolete green; lores and hinder-face uniform dark brown, the latter extending in a slightly narrow band across the hind-neck; mantle, back, and scapulars dull olive-green; rump and upper tail-coverts similar but somewhat brighter; upper wing-coverts dark brown with pale narrow edgings to the feathers, becoming darker and more uniform on the bastard-wing; flight-quills dark brown narrowly edged with grey on the outer-webs and more broadly with white on the inner ones; tail-feathers also dark brown fringed with green on the outer-webs and with white on some of the inner ones; cheeks whitish; chin dusky with hair-like tips to the feathers; throat, fore-neck, sides of neck, breast, and sides of breast drab-grey; abdomen, lower flanks, thighs, and under tail-coverts fawn-colour; axillaries and under wing-coverts pale buff; under-surface of flight-quills pale brown margined with white; lower aspect of tail greyish-brown with whitish margins to some of the feathers. Total length 140 mm.; culmen 11, wing 72, tail 55, tarsus 18. Collected at Granville, New South Wales, in May, 1892.

Immature. Top of head, including the fore-head, nape, and hind-neck rust-brown; mantle, back, rump, upper tail-coverts, and scapulars similar, more or less tinged with green; upper wing-coverts for the greater part rust-brown; bastard-wing blackish; primary-coverts and outer aspect of flight-quills dark yellowish-green, inner-webs of quills blackish fringed with white; tail-feathers also yellowish-green with dark brown on the inner-webs; sides of face dark brown inclining to black on the lores, feathers round the eye, and moustachial streak; throat, breast, abdomen, sides of body, and under tail-coverts very pale sulphur-yellow; axillaries

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and under wing-coverts similar; under-surface of flight-quills dark hair-brown margined with white; lower aspect of tail greyish-white. Collected at Scott's Creek, South Australia, on the 29th of January, 1898.

Eggs. Two to three eggs form the clutch. A clutch of two eggs taken at Somerville, Victoria, on the 18th of December, 1897, is of a pale reddish-buff ground-colour, spotted and speckled (chiefly at the larger end of each egg) with reddish-brown and purplish-grey. Rather rounded ovals in shape; surface of shell smooth and slightly glossy. 20 mm. by 14.

Nest. A rather small cup-shaped structure, composed of thin strips of bark and grasses well matted together with cobwebs and spiders' cocoens. Generally very warmly lined with fur or hair. Dimensions over all $2\frac{1}{2}$ to nearly 3 inches across by $2\frac{1}{2}$ to nearly 3 inches in depth. Egg cavity almost 2 inches across by nearly 2 inches in depth.

Breeding-months. September to end December.

Melithreptus atricapillus submagnirostris.

Eggs. Two to three eggs form the clutch. A clutch of two eggs taken at Ringwood South, Victoria, on the 19th of October, 1913, is of a pale reddish-buff ground-colour, spotted and finely speckled with reddish-brown, and purplish-grey. Slightly swollen ovals in shape; surface of shell smooth and slightly glossy. 19 by 13 mm.

Nest. Very similar to that of *Melithreptus a. atricapillus*. The nest from which the latter clutch was taken is open cup-shaped, and beautifully constructed. Composed almost entirely of horsehair, white cowhair, and a few shreds of bark as a base. It was placed up 20 feet from the ground in the topmost twigs of a Eucalyptus sapling.

Breeding-months. August to December.

GOULD in his "Handbook" admitted that he had been unfamiliar with this bird and that his attention was drawn to it by Dr. Bennett of Sydney and Mr. George French Angas, and upon investigation he found that he had specimens which he had classed as immature *M. lunulatus*; but upon re-examination he was able to notice many differences, and concluded: "Should it ultimately prove to be distinct, then it must bear the inappropriate name of *Melithreptus brevirostris*, as I find it is strictly identical with the type specimens of the bird so called by Vigors and Horsfield, formerly in the collection of the Linnean Society, and now in the British Museum."

When Vigors and Horsfield described their new species, they wrote: "This bird is said to be common by Mr. Caley, and to be called *Cung'leer* by the natives."

Mr. Thos. P. Austin has written me from Cobbora, New South Wales: "Some years not a bird to be seen, then again in other years they arrive in hundreds, and unless breeding, they travel about in flocks. They are one of the most curious and fearless of all the birds of this district. I find if I approach them quietly and then keep quite still, they will come all round within a few feet of me and examine me with the greatest curiosity. When

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building I have often had them come and perch upon the horse I am riding quite irrespective of me sitting in the saddle, and try to pull hair out of the horse for nesting material. The first nest I found of this species was discovered in a strange way. I was out collecting and saw one of these birds fly low over my head with its bill full of fur; in a few moments it returned, and then shortly afterwards came back with more fur; being anxious to see where it obtained the material I followed it up and discovered it clinging to the back of a Native Bear, '*Phascolarctus cinereus*,' and picking fur out of it. I then followed the bird to its nest, but next time I visited it, the Honey-eater had deserted it owing to a Pallid Cuckoo having deposited an egg in it, evidently before it was quite completed. They are extremely close sitters, in some cases it is almost an impossibility to make a sitting bird leave its nest; for instance, on September 17th, 1917, I found a pair of these birds building a nest at the extreme end of a long thin branch, projecting from the main stem of an iron-bark sapling and about twenty feet from the ground. Upon visiting it on the 24th I saw no bird near the nest, so after waiting some little time I climbed the tree, and with the aid of a mirror I saw it contained an egg of a Pallid Cuckoo; this I scooped as I was quite satisfied the rightful owners had deserted the nest. Upon visiting the nest again on the 29th with Mr. A. F. Basset Hull of Sydney who was on a visit here, we found the Honey-eater sitting. I again climbed the tree, and although I could reach to within about five feet of the nest, nothing would induce the sitting bird to flush. I obtained a stick and actually lifted her (I presume it was the female) right out of the nest, but almost immediately she was back in the nest, and tucking her head beneath her body, right down into the egg chamber. Nothing I could do would shift her, so I then cut off the branch with my pocket knife, holding it the while. This was too much for the poor little bird, for when I was just about to put my hand on her, she slid off her three fresh eggs, but even then she turned and made an attempt to get back into the nest."

Mr. F. E. Howe has written: "In the timber about the open and hilly country near Melbourne they are often noticed and usually in flocks of from six to ten birds. As they flit from tree to tree they are seen to have an undulating flight and when on the wing utter a grating note. It no doubt nests in the district as I once saw well-fledged young being fed. On one occasion at Ringwood I saw a bird pulling hair from the back of a cow as lining for a nest that I couldn't find."

Mr. L. G. Chandler also wrote: "At Frankston on April 5th a small flock of birds were noticed feeding on insects on the gum leaves. They kept up a continual din with their high pitched note, that is repeated quickly in repetition. During a trip to the You Yangs on August 31st, I observed they

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were plentiful in flocks of thirty or more birds. The branches and leaves of a tree or shrub are quickly searched for insects and with a noisy chatter they fly on to the next tree. I have seen the bird in the Bayswater and Ringwood districts, and whenever met with they were always first noticed by their noisy manner. They are not a very common bird and rarely more than a dozen are seen in a flock. This species remain with us the whole year."

Mr. Tom Tregellas' note reads: "This bird is not at all plentiful in the districts around Melbourne, being found only in isolated flocks of half a dozen or so at a time, and passing from tree to tree very quickly. It is found associated with *Ptilotis penicillata* and *Melithreptus lunatus*, but does not stay for any length of time with them, being always the first to leave the tree in search of fresh food. Like the rest of our Honey-eaters its diet does not consist wholly of the nectar from the honey-bearing trees but is varied considerably by means of insect food. It is frequently seen flying into the air from the topmost bough of a tall sapling in quest of these insects, and its habit in this respect so clearly resembles that of *P. penicillata* that it is difficult to separate them on the wing. In the Ringwood district they are in fair numbers but at Frankston they are seldom seen."

Mr. J. W. Mellor has written me: "This is a fairly common species in South Australia, where I have seen it in a great variety of places and especially in the more open scrub and bush country where mallee abounds; they often collect in large flocks of twenty or thirty and go about seeking their food in this way: as soon as one starts flying, the whole flock follow in pursuit and go in a somewhat jerky flight in an undulating fashion, alighting in some tree that grows a little higher than the surrounding scrub and then commence hopping and clinging about the twigs in a very animated way but never staying long in one place, but off again at a great rate. I have often followed them for long distances to make sure of their identity. I have seen them on Eyre Peninsula, South Australia, also on Yorke's Peninsula, in the Mount Lofty Ranges and in the Flinders Range. They are common on the Adelaide Plains, and I have noted them at the Reedbeds feeding on the honey in the eucalyptus flowers, which forms their chief food, but they also eat insect life. Their breeding time is from August to December. . . The Kangaroo Island form I have noted in various places on the island from Cape Borda in the west to Hog Bay in the east; it lives in the higher trees and the habits are similar to those of other members of the genus. It goes in small flocks of half a dozen, uttering a plaintive little call as it flies from tree to tree in search of its nectar food, but it also feeds on insects. It breeds from August to December."

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Capt. S. A. White writes: "Is a common bird in South Australia, met with all through the Mallee country but does not seem to extend into the interior. It follows the Flinders Range for some 400 miles inland and I have taken it at Ooldea on the Nullarbor Plain. Specimens taken in the Mallee east of the Murray, Mount Lofty Ranges, Yorke's Peninsula, Eyre Peninsula, West Coast, Flinders Range, Ooldea and other places show little variation to me. Their note is a feeble one and they live upon insect life mostly, but when the gums are in blossom frequent the flowers for honey."

Sullivan remarks: "It is remarkable how the short bill takes from this bird the whole characteristic shape of the Honey-eaters. As this bird hops and dives about the mallee bushes in search of blight and larvæ hidden under bark, it might easily be taken for a Tit."

Wilson, writing of the Victorian Mallee, recorded: "Another familiar bird that we frequently met; although differing but very slightly from the southern representative of the species, it is not of such a stout build."

Ashby, from the South Australian Mallee, simultaneously wrote: "The specimens obtained were very bright green on the back; whether or not there is an exceptionally green strain inhabiting the Mallee, I was unable to determine."

Of the Flinders Range Captain S. A. White has stated: "Was the commonest bird in the ranges. It was travelling about in parties of from twelve to thirty." Later of Mallee (South Australia) birds he added: "Seen in the low scrub close to the river. Two specimens taken at 'Millewa,' 11/10/17. No. 1 ♀, iris brown: bare skin round eye pale yellow; bill black; feet brownish-yellow; length 150 mm.; spread of wings 220 mm. Upon comparison these birds do not differ from specimens from the north-west of this State."

Le Souëf and Macpherson have written from Sydney, whence this bird was first described by Latham and also by Vigors and Horsfield: "This species is rather numerous in Taronga Park, where a combination of eucalyptus and flower beds is much to its liking. It is very happy when the cannas are in flower, and bores holes at the base of the blossom to extract the nectar. These birds are very tame, and usually go about in small flocks, and have a chuckling note."

Of the Kangaroo Island bird A. G. Campbell has written: "This bird inhabits the sugar gums and the stringy-bark. It has been separated from *M. brevirostris* as a new species by Mr. A. J. North. It has a large bill (.57 in.), but *M. brevirostris* reaches .5 in. The colour of the bill is black, while *M. brevirostris* is brownish-black. Specimens from Nhill, in North-western Victoria are, however, jet black, like the Island form. As with all *Melithrepti*, the bill of the female sex is always smaller by about .05 in. There is a traceable dark band below the light collar which does not exist in the mainland birds,

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and the crown, ear-coverts, back, and under tail-coverts are all slightly darker. In life a bluish spot exists in the centre of the bare lower eyelid. This has not been noted in *M. brevirostris*, though it occurs with *M. leucogenys* of Western Australia."

Apparently Gould referred to this western form, *leucogenys*, as the immature of *chloropsis*, as previously noted.

Milligan found this bird in the Stirling Ranges, and wrote "The locality was very rich in flowering shrubs, and as a consequence Honey-eaters of all kinds were numerous and characteristically vivacious. Whilst standing on a hillside in the midst of the scrub, a *Melithreptus* perched for an instant on a bush close by. Its blackish-grown head and white cheeks at once arrested my attention, but before I had time to shoot it it flew away. Subsequently I heard a series of rattle-like notes. These I traced to birds similar to the one described. The birds were very shy, but after much patience and pursuit I secured one, and afterwards two others. On examining them the orange-coloured eye-spaces and bluish-emerald orbits and their white cheeks appeared to me at once to distinguish them from *M. brevirostris*. . . . [I described them as a new species *M. leucogenys*.] Later, at the Wongan Hills, Milligan shot several specimens: "in every specimen the eye-zones were yellow and the orbits bluish-emerald, and the other characteristics upon which I distinguished it from the Eastern form were also constant."

Whitlock later went to the Stirling Ranges and reported: "This Honey-eater seems to prefer the open country rather than the forests of gums. I did not find it common anywhere. Where it occurred it was usually fluttering about in little parties of less than half a dozen. It is a fussy, animated bird and is constantly uttering its rather unmusical and rattling notes. Its favourite haunts appeared to be the sand-plain which had escaped the general destruction and where there was a growth of stunted jarrahs. Certain creeks whose banks were well-clothed with scrub of the mallee type were also much favoured, and it was in such localities this bird seemed to find its food. I cannot recollect ever having observed it extracting the nectar from flowers. Its quest seemed to be more insectivorous, and the sprays of foliage were assiduously searched in pursuit of its prey. It must be a late breeder, as I saw the sexes more than once in the act of pairing. This was in the beginning of October, when many species had eggs.

Mr. Tom Carter has written me: "The Western Brown-headed Honey-eater occurs rather sparingly about Broome Hill. Seen in some numbers, and specimens obtained at Kellerberin. This species occurs inland, taking the place of *Melithreptus chloropsis*."

Regarding the Perth district Alexander has stated: "Resident. Uncommon, but met with among the bushes in the more open country in the district."

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Gibson reported it from between Kalgoorlie and Eucla as "A few seen in the gum and wattle country at first only ; rare."

The early technical history of this ill-used species was carefully written up by me in the *Austral Avian Record*, Vol. III., pp. 25-30, Nov. 18th, 1915, accompanied by Plate II., a perfectly reproduced figure of Watling's plate upon which the name *Certhia atricapilla* was based. Since that date it has become definitely recognised that the names given by Latham were not based on the "Watling" figures but on the equivalent Lambert ones. In the present case there can be no reasonable doubt that the paintings are of the identical bird as the description reproduced here shows.

Latham described his "Black-headed Creeper" thus: "Length six inches; bill dusky; tongue bristly; top of the head, and from the base of the upper mandible black, passing through the eye, and below it some way on each cheek; hind-part of the neck, back, wings, and tail pale green, but the wings and tail are brown, with pale edges; chin, sides of the neck, and fore-part of it, as well as the under-parts of the body, dusky-white; legs pale brown. Inhabits New South Wales."

This description is so perfect, except in the colour-shade of the head, that with the reproduction in front no one can hesitate to accept this figure as a most excellent painting of the present species.

Yet because this species was not recognised by Gould as a distinct species, but simply as the immature of the White-naped Honey-eater, when the Lambert drawings were examined by G. R. Gray, he wrote

" <i>Certhia atricapilla</i> Lath.	<i>Melithreptes atricapillus</i>
= <i>Certhia lunulata</i> Shaw, etc.	Vieill."

In this particular instance Gould ignored the identification, but without disputing it or giving any reason for his omission, so that it may have been an oversight only.

In his "Handbook" Gould admitted that he had previously confused this species and only grudgingly accepted the fact that it was quite distinct. He then observed that it had a name, as Vigors and Horsfield had described it as *Meliphaga brevirostris*, and if the species were distinct that would be the name. It may be again pointed out that Vigors and Horsfield quoted Caley's note that it was a common bird.

Immediately, Australian ornithologists recognised the distinctions and the species became well-known under the name *Melithreptes brevirostris*. In *The Catalogue of the Birds of the British Museum* this name was used by Gadow, as it was the easiest thing to do. Though the identification of Latham's *Certhia atricapilla* was recorded, Gould took no notice of it, never even mentioning it in any connection. This oversight was exposed by North twenty years

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afterwards, who recommended the usage of Latham's name for the species known as *lunulatus* Shaw, though recording the items of discrepancy. Apparently North had no idea that the name might apply to the present species on account of the prejudice of the "black" head.

At the same time Sharpe published his account of the Watling drawings and with regard to No. 105 wrote: "This figure is intended for the bird usually called *Melithreptus lunulatus* (Shaw)," and proposed to use Latham's name in place of Shaw's. This coming in conjunction with North's independent advocacy of Latham's name was sufficient for my usage at that date, so I accepted these two workers' conclusions.

Nevertheless neither was exactly correct, and upon my own examination of Watling drawing No. 105 I found that the figure was undoubtedly painted from a specimen of Vigors and Horsfield's *Meliphaga brevirostris*.

I therefore recorded this fact and it was demurred against on account of the misnomer involved in the term *atricapillus*, as the species is not *really* black-headed. This is mere quibbling, as the well-known case of the Common British Bird, the Black-headed Gull, proves: that bird has a brown head, yet the *vernacular* calls it BLACK, and it is known to millions by that name. Again, in the present genus a bird is now being called the Golden-backed Honey-eater, which is a mere figure of speech.

As noted above, the complicated history is detailed in the *Austral Avian Record* with a good plate.

There is no doubt that the earliest name is Latham's *Certhia atricapilla* and that *Meliphaga brevirostris* Vigors and Horsfield is an absolute synonym.

No subspecies or species were separated until Milligan described from the Stirling Ranges, South-west Australia, a new species as *Melithreptus leucogenys*, writing: "The specific differences between them, briefly summarized, are (a) the new is less robust generally, and the bill in particular is shorter and more slender; (b) the bare spaces surrounding the eye are orange and bluish-emerald; (c) the blackish chin is distinctly marked, as also the greyish breast; (d) the cheeks are white; and (e) the head is blackish-brown."

Then North, who named very few subspecies, though commonly indicating such in his work, named the Kangaroo Island form as a new species on account of its larger bill with the name *Melithreptus magnirostris*. This was a poor "specific" name as we already had a good well-known species, *Melithreptus validirostris*, but it became a good subspecific name in connection with the specific *atricapilla*, as *Melithreptus atricapillus magnirostris* well describes this large-billed form of a species previously known as "*brevirostris*."

When I prepared my "Reference List" in 1912 I was surprised to see how variable geographically this species was, and recognising Milligan's *Melithreptus*

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leucogenys and North's *M. magnirostris* as of subspecific value only, I added five more, making eight subspecific forms. These were:

Melithreptus atricapillus atricapillus (Latham).

New South Wales.

Melithreptus atricapillus submagnirostris Mathews.

"Differs from *M. a. atricapillus* in its stouter bill and greener coloration, but the bill is not so strong as in *M. a. magnirostris*. (Ringwood) Victoria."

Melithreptus atricapillus augustus Mathews.

"Differs from *M. a. atricapillus* in having a distinct white throat, lighter back, and smaller size. Port Augusta, South Australia."

South Australia (Port Augusta).

Melithreptus atricapillus pallidiceps Mathews.

"Differs from *M. a. atricapillus* in its paler coloration, especially the head and under-surface, the rump and back being bright green; also in its slender bill, differing thus from *M. a. submagnirostris*. 90 Mile Desert, South Australia."

South Australia, Interior.

Melithreptus atricapillus magnirostris North.

Kangaroo Island, South Australia.

Melithreptus atricapillus insularis Mathews.

"Differs from *M. a. magnirostris* in its shorter bill, though as stout, and darker coloration of the under-surface; and from *M. a. submagnirostris* in its less green coloration, especially on the upper tail-coverts. King Island."

King Island.

Melithreptus atricapillus leucogenys Milligan.

West Australia (Stirling Ranges).

Melithreptus atricapillus subleucogenys Mathews.

"Differs from *M. a. leucogenys* in its darker coloration above and below. Lake Dundas, West Australia.

A little later I added

Melithreptus atricapillus minnie.

"Differs from *M. a. atricapillus* in having a brown nuchal collar. (Minnie Downs (Central Queensland))."

Queensland.

and

Melithreptus atricapillus mallee.

"Differs from *M. a. submagnirostris* in its smaller size. Mallee, Victoria."

Mallee district of Victoria and South Australia.

On the advice of my Australian correspondents I sank as a synonym of the Port Augusta bird the one I described from the 90 Mile Desert, but otherwise admitted all the forms as above in my 1913 "List."

NATIONAL MUSEUM MELBOURNE



H. Grönvold, del

Witherby & Co

MELITHREPTUS AFFINIS
 (BLACK HEADED HONEY-EATER)
 PLECTORHAMPHUS LANCEOLATUS
 (STRIPED HONEY-EATER)

Order PASSERIFORMES.

Family MELITHREPTIDÆ.

No. 639.

MELITHREPTUS AFFINIS.

BLACK-HEADED HONEY-EATER.

(PLATE 513.)

EIDOPSARUS AFFINIS Lesson, Revue Zool., 1839, June No., p. 167, July : " New South Wales " errore=Tasmania=Hobart.

Eidopsarus affinis Lesson, Revue Zool., 1839, p. 167.

*Melithreptus melanocephala** Gould, Birds Austr., pt. xviii. (Vol. IV., pl. 75), June 1st, 1845 : Tasmania=Hobart ; *id.*, Proc. Zool. Soc. (Lond.), 1845, p. 62, Sept. ; *id.*, Handb. Birds Austr., Vol. I., p. 573, 1865 ; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 190, 1878 ; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 207, 1884 ; Legge, Papers Proc. Roy. Soc. Tasm., 1886, p. 240 1887 ; Ramsay, Tab. List Austr. Birds, p. 14, 1888 ; Hall, Key Birds Austr., p. 39, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 366, 1901 ; Littler, Emu, Vol. II., p. 169, 1903 ; A. G. Campbell, *ib.*, p. 207 (King Island) ; Fletcher, *ib.*, Vol. IV., p. 15, 1904 ; A. G. Campbell, *ib.*, p. 123, 1905 ; Brent, *ib.*, Vol. V., p. 12, 1905 ; North, Austr. Mus. Spec. Cat., No. I., Vol. II., p. 187, 1907 ; Littler, Handb. Birds Tasm., p. 56, 1910 ; Fletcher, Emu, Vol. XI., p. 106, 1911 ; White and Mellor, *ib.*, Vol. XII., p. 163, 1913 (Flinders Island) ; Dove, *ib.*, Vol. XV., p. 234, 1916.

Melithreptus affinis North, Ibis, p. 56, 1906 ; Mathews, Handl. Birds Austral., p. 92, 1908 ; *id.*, List Birds Austr., p. 262, 1913.

Meliphaga atricapilla Jardine and Selby, Illus., Vol. 3, Ornith., pt. 9, pl. 134, fig. 1, 1833 (Feb.).

Not *Meliphaga atricapilla* Temminck and Laugier, 1825, nor *Certhia atricapilla* Latham, before.

Melithreptus alisteri Mathews, Bull. Brit. Orn. Club, Vol. XXV., p. 85, March 31st, 1910 : King Island.

Melithreptus affinis affinis Mathews, Nov. Zool., Vol. XVIII., p. 394, 1912 ; *id.*, List Birds Austr., p. 262, 1913.

Melithreptus affinis alisteri Mathews, Nov. Zool., Vol. XVIII., p. 394, 1912 ; *id.*, List Birds Austr., p. 262, 1913.

DISTRIBUTION. Tasmania and King Island and Flinders Group only.

* Also spelt *melanocephalus*.

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Adult male. Top of head including the fore-head, lores and nape black like the sides of face, sides of neck, chin, throat and sides of breast; hind-neck, back, scapulars and upper tail-coverts yellowish-green; upper wing-coverts dusky bronze-brown; flight-quills dark brown with olive on the outer margins and white on the inner ones; tail bronze-brown; fore-neck and sides of neck white becoming greyish-white on the breast, abdomen and sides of the body; vent white, thighs cinnamon-brown; under tail-coverts pale grey; axillaries pale grey, under wing-coverts and inner margins of quills below white, remainder of quill lining dark brown; lower aspect of tail similar but rather paler. Bill black, feet flesh. Total length 155 mm.; culmen 11, wing 81, tail 65, tarsus 19. Figured. Collected on King Island, Bass Straits, on the 11th of November, 1902, and is the type of *M. a. alisteri*.

Adult female. Similar to the adult male.

Young male. Head sooty-brown becoming more rufous-brown on the hind-neck and mantle; the wings, back, and upper tail-coverts tinged with yellowish-green and paler tips to some of the feathers; bastard-wing dark brown or blackish; primary and secondary quills dark brown, the outer ones edged with whitish, outer webs of inner secondaries fringed with yellowish-green; tail dark brown fringed, more or less, with yellowish-green on the outer webs; lores, a line over the eye, ear-coverts, cheeks, and chin black; throat, breast, abdomen, sides of body, and under tail-coverts pale yellow; under wing-coverts and inner webs of the quills below white. Collected on King Island.

Eggs. Two to three eggs form the clutch. A clutch of three eggs taken at Austin's Ferry, Tasmania, on 7th October, 1909, is of a pale flesh-tint ground-colour, minutely spotted and speckled with reddish-brown and dull purplish-grey, which are chiefly confined to the larger end of each egg. Swollen ovals in shape, surface of shell rather fine and smooth, but almost devoid of gloss. 19 mm. by 14.

Nest. A rather deep cup-shaped structure, composed of strips of bark, much wool and cobwebs, and warmly lined with hair, fur and feathers. It is generally suspended among the smaller twigs at the end of a drooping branch of a *Eucalyptus* tree, and frequently very high up from the ground; and usually in a most difficult position for a person to get at. Dimensions over all: 3 inches across by 4 inches deep, and the egg-cavity 2 inches across by nearly 2 inches deep.

Breeding-months. October to end December.

ALTHOUGH Gould was not the first to characterise this species, his field-notes are the first to be recorded, and I here quote them: "This bird I believe to be peculiar to Tasmania, over the whole of which island it is very abundant. The *Eucalypti* are the trees for which it evinces a preference, and it may constantly be seen among their foliage and flowers searching for its food, which, like that of the other members of the *Meliphagidæ*, consists principally of insects, particularly small colcoptera; like the other species of the family also, it creeps and clings about the branches after the manner of the Tits of Europe. It is a lively, animated bird, and generally goes in companies of from ten to twenty in number, according as the supply of food may be more or less plentiful. During the fruit season it frequents the gardens of the settlers and commits considerable havoc among the fruit, of which it is exceedingly fond."

BLACK-HEADED HONEY-EATER.

Mr. Frank Littler has sent me: "Is a fairly common species, associating in small flocks in some districts during certain seasons of the year." In districts where "small fruit growing is somewhat exhaustively carried on, this Honey-eater proves rather a pest, by forsaking its natural food and living almost entirely on a fruit diet, gooseberries being specially favoured. The loss of a little fruit would not be so much minded, if that attacked were eaten right up, but, as it is, the bird makes one peck at a berry and then goes to the next."

Mr. J. W. Mellor has written to me: "This is the commoner of the two *Melithrepti* found in Tasmania, and I have noted it in various places from Hobart in the south to Launceston in the north and on the islands of Bass Straits. I found it in November, 1912, on Flinders Island, Bass Straits, and secured specimens for identification. It frequents both the high and lofty trees and also the low bushy shrubs, and eats both honey and insect life. It has a sharp short call several times repeated, like other members of the genus."

Captain S. A. White's experience seems different: "I have never found the bird really plentiful at any time in any part of Tasmania. The habits seem to be like those of the other members of the genus, living mostly upon insects."

Of the King Island form A. G. Campbell wrote: "This is another bird seen only in the timber about Pass River, and is there even more plentiful than the preceding species (*M. validirostris*). It is a very energetic little Honey-eater, and rather pugnacious, driving away even the larger Yellow-throated Honey-eater from its domains. On one occasion two of these Honey-eaters fell at my feet struggling in one another's claws, and they continued the dispute on the ground for some seconds. They, too, pry about actively on the eucalyptus bark in search of food. The fully-fledged young are brown on the back, quite yellow on the under-surface, and the complete brilliant black hood characteristic of the adult is represented only by dull black on the face and chin. . . . The King Island bird, again, is larger than the Tasmanian. The back and head of the young bird are brownish. Only about the throat and cheeks is there any appearance of the black, which in the adult envelops the head as a hood; bill brownish, cere yellow, becoming on maturity light green above and deep blue below."

A complete account of this species has been published by A. E. Brent in the *Emu*, Vol. V., p. 12, 1905, to which I refer all interested and from which I quote: "This species is one of the smallest of the Honey-eaters, and is unknown on the Australian mainland, though very common in Tasmania, more especially in the mountain ranges of the south. It is partly insectivorous, and in winter is to be seen feeding on small insects (caterpillars, etc.),

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which it obtains from under the dry bark and leaves on the branches of trees. It may sometimes be seen working its way along on the underneath side of a branch, back down, and pecking away the dry bark most vigorously in search of insects; but when the spring and summer return, and the eucalyptus trees begin to bloom, you will find it enjoying the nectar from the blossoms once more. In spring the birds flock together in mobs in the honey trees, but during the summer they live in pairs. . . . Colours are not distinguishable between the sexes, except that the male is a little brighter. But in flying the female always goes first, the male following her in all her movements, and when she settles on a branch he settles close up to her. . . . As to the habits of this species, during most of the year the birds make a sharp, whistling noise, but in the nesting period the call is quite different, and anyone accustomed to the birds can tell at once by the call whether they have a nest or not. The birds, both male and female, after pairing, are most industrious, and in a few days start to build the nest, and within a week they will not only have built this, but will have stocked it with eggs. If robbed, they will make another nest, and the fresh eggs will be laid within a week if the old nest is torn about; and this they will do at least three times. The eggs with each fresh clutch become paler and with less numerous spots. The birds build in November, and the eggs laid are three in number. From the time they are laid till they are hatched is about sixteen days. The young birds of the first brood can be seen flying during Christmas week. In ordinary seasons there are at least three broods in a year. . . . After the eggs are laid the female seldom leaves the nest, in windy weather never; if she did the eggs might be thrown out, as the nests are then nearly upside down. . . . The male is most attentive to his mate in bringing food, which, at the nesting season of the year, consists mostly of honey and manna. The young are also fed on the same food by both birds. The male, when his mate is sitting, is never more than a few minutes away from her, and by constantly watching him at this time the nest is easily found. In fine weather, when the female wants to leave the nest she gives a peculiar call, and the male at once takes her place."

There is little to record in connection with this species as regards its technical history. Lesson first named it as a new species, but was ignorant of the exact locality and gave New South Wales. Gould later named it from Tasmania and, when he recognised Lesson's name, instead of using it, queried its applicability. Sixty years passed before North reinstated the undoubtedly correct name given by Lesson.

I described the King Island form as a new species

Melithreptus alisteri.

BLACK-HEADED HONEY-EATER.

"Differs from *M. affinis* Lesson in having a large bill and in being altogether larger."

This was in accordance with the usage at that time, as North had just previously described the Kangaroo Island form of *M. brevirostris* as a new species on the same grounds.

In my "Reference List" in 1912 and in my 1913 "List" I regarded these as subspecies only, admitting

Melithreptus affinis affinis (Lesson).

Tasmania.

Of this *Melithreptus melanocephalus* Gould is a synonym.

Melithreptus affinis alisteri Mathews.

King Island.

GENUS—ENTOMYZON.

ENTOMYZON Swainson, Zool. Journ., Vol. I.,
pt. 4, p. 480, Jan. 1825. Type (by original
designation) Blue-faced Grakle of Latham
= *Gracula cyanotis* Latham.

Also spelt—

Entomiza Swainson, Classif. Birds, Vol. II., p. 328, 1837.

Entomyza Gould, Proc. Zool. Soc. (Lond.), 1840, p. 169.

Entomizon Cabanis, Mus. Heine, Vol. I., p. 121, 1851.

LARGE *Melithreptine* birds with long stout bills, large bare eye-space, long wings, long tail and stout legs and feet.

The bill is long, laterally compressed with little basal expansion; culmen arched, tip depressed, posteriorly notched, edges straight; culmen semi-keeled, nasal groove long and shallow, nearly half the length of the bill, the nasal apertures small ovals anteriorly placed in groove; the frontal feathering approaches nearly half-way on to the groove and there are no nasal nor rictal bristles; the interramal space small, elongate, feathered, the gonys not markedly angulate, straight; lower mandible stout; depth of both mandibles at base of bill more than breadth at same place.

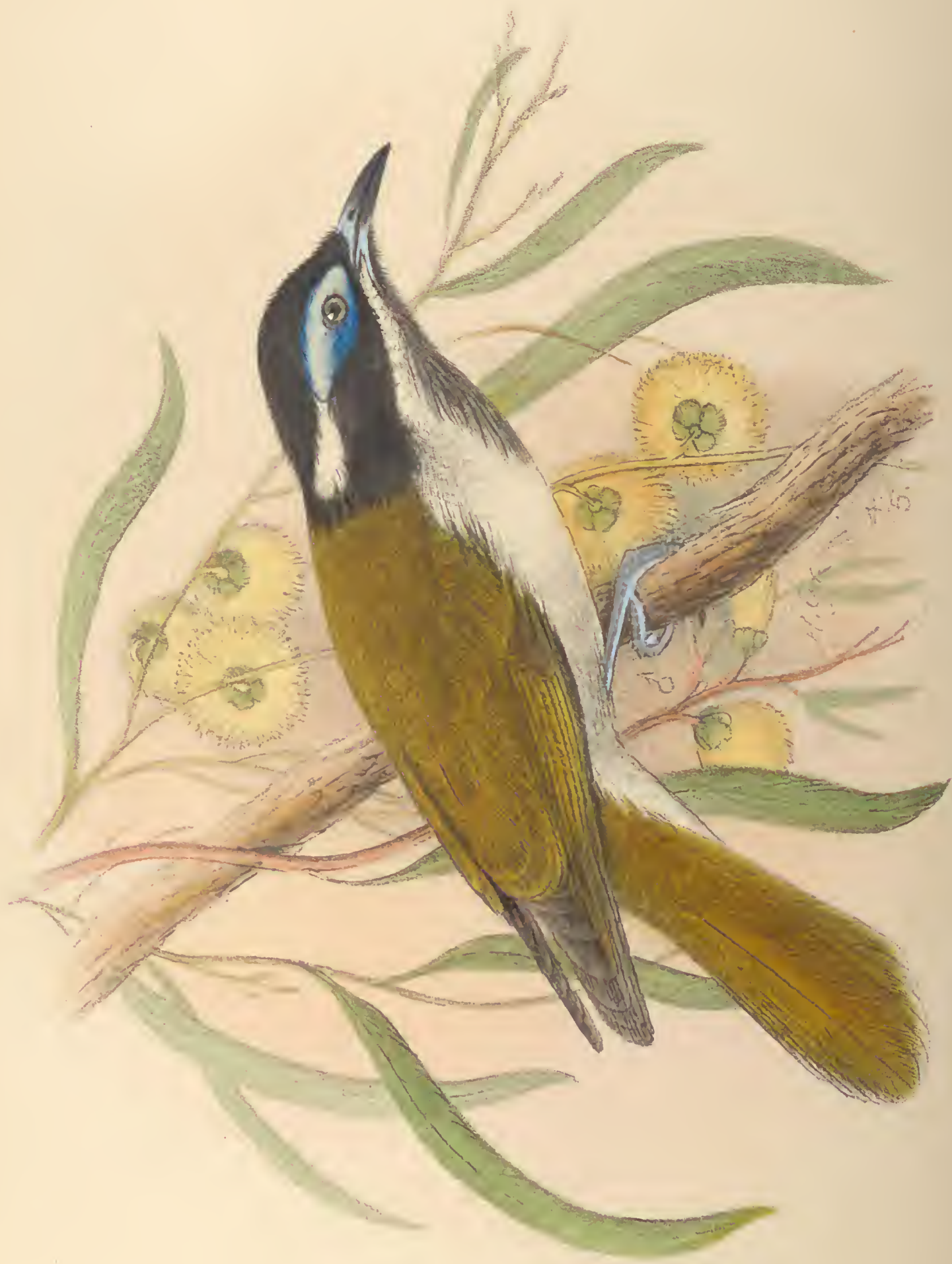
The wing is long, with the third, fourth, fifth and sixth primaries subequal and longest, the third and sixth a little shorter, the second less than the seventh but much longer than the secondary, the first primary less than half the length of the second.

The tail is long and rounded.

The legs are short and stout, the front of the tarsus strongly scutellate, the back bilaminate; the feet are strong, the hind-toe is long and stout, the hind-claw very stout, the hind-toe and claw much longer than the middle toe and claw, the inner and outer toes subequal, the inner toe and claw equalled by the middle toe alone.

This genus is purely an exaggerated *Melithreptus*.

NATIONAL MUSEUM MELBOURNE



H. Gronvold del

Witherby & Co

ENTONIXON CINZOTIS
(YELLOW FACED HONEY-EATER)

Order PASSERIFORMES.

No. 640.

Family MELITHREPTIDÆ.

ENTOMYZON CYANOTIS.

BLUE-FACED HONEY-EATER.

(PLATE 514.)

GRACULA CYANOTIS Latham, Index Ornith. Suppl., p. xxix. (after May 30th), 1801 : New South Wales, based on General Davies' drawing.

Gracula cyanotis Latham, Index Ornith. Suppl., p. xxix., 1801.

Merops cyanops Latham, *ib.*, p. xxxiv., based on Lambert drawing (Watling No. 94) : New South Wales.

Turdus cyanous Latham, *ib.*, p. xlii., based on Lambert drawing (Watling No. 145) : New South Wales.

Blue-eared Grackle Latham, Gen. Synops. Birds, Suppl. II., p. 130, 1801.

Blue-cheeked Bee-eater Latham, *ib.*, p. 154.

Blue-cheeked Thrush Latham, *ib.*, p. 184.

Certhia graculoides Bechstein, Kurze Uebers. Vögel, p. 198, 1811 : New South Wales.

Certhia graculina Shaw, Gen. Zool., Vol. VIII., pt. 1, p. 242, 1812 : New South Wales.

Philemon viridis Vieillot, Nouv. Diet. d'Hist. Nat., nouv. ed., Vol. XXVII., p. 431, Dec. 26th, 1818 : New South Wales.

Tropidorhynchus cyanotis Vigors and Horsfield, Trans. Linn. Soc. (Lond.), Vol. XV., p. 325, 1827.

*Entomiza** *cyanotis* Swainson, Classif. Birds, Vol. II., p. 328, 1837 ; Gould, Birds Austr., pt. II. (Vol. IV., pl. 68), March 1st, 1841 ; *id.*, Handb. Birds Austr., Vol. I., p. 560, 1865 ; Ramsay, Proc. Zool. Soc. (Lond.), 1875, p. 597 (N.Q.) ; *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 190, 1878 ; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 268, 1884 ; Ramsay, Tab. List Austr. Birds, p. 14, 1888 ; Hall, Key Birds Austr., p. 45, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 429, 1901 ; North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 177, 1907 ; Hill, Emu, Vol. VII., p. 19, 1907 (Vic.) ; Austin, *ib.*, p. 31 (N.S.W.) ; Mathews, Handl. Birds Austral., p. 99, 1908 ; Cleland, Emu, Vol. XII., p. 17, 1912 (Food) ; S. A. White, *ib.*, Vol. XIII., p. 128, 1914 (S.A.) ; Cleland, *ib.*, Vol. XVIII., p. 283, 1919 (N.S.W.) ; Harvey Bros., *ib.*, Vol. XIX., p. 38, 1919 (N.Q.).

Entomyza albipennis Gould, Proc. Zool. Soc. (Lond.), 1840, p. 169, July 1841 : Port Essington, Northern Territory ; *id.*, Birds Austr., pt. xvii. (Vol. IV. pl 69), Dec. 1st,

* Also spelt *Entomyza* and *Entomyzon*.

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1844; *id.*, Handb. Birds Austr., Vol. I., p. 563, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 190, 1878; Gadow, Cat. Birds Brit. Mus., Vol. X., p. 269, 1884; Ramsay, Tab. List Austr. Birds, p. 14, 1888; Hall, Key Birds Austr., p. 45, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 432, 1901; Le Souëf, Emu, Vol. II., p. 92, 1902 (N.T.); Berney, *ib.*, Vol. V., p. 76, 1906 (N.Q.); North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 180, 1907; Mathews, Handl. Birds Austral., p. 99, 1908; *id.*, Emu, Vol. IX., p. 15, 1909 (N.W.A.); *id.*, *ib.*, Vol. X., p. 110, 1910 (N.W.A.); Hill, *ib.*, p. 288, 1911 (N.W.A.); Barnard, *ib.*, Vol. XI., p. 28, 1911 (N.Q.); Hill, *ib.*, Vol. XII., p. 260, 1912 (N.T.); Barnard, *ib.*, Vol. XIV., p. 49, 1914 (N.T.); H. L. White, *ib.*, Vol. XVI., p. 228, 1917 (N.T.); Campbell, *ib.*, Vol. XVIII., p. 186, 1919 (N.T.).

Tropidorhynchus albipennis Gray, Genera Birds, Vol. I., p. 125, 1846.

Philemon cyanotis Gray, Handl. Gen. Sp. Birds B.M., Vol. I., p. 160, 1869.

Philemon albipennis Gray, *ib.*

Entomyza cyanotis harterti Robinson and Laverock, Ibis, 1900, p. 635, Oct. No., received B.M. Nov. 20th: Cooktown, North Queensland; Hall, Key Birds Austr., 2nd ed., p. 113, 1906.

Entomyza harterti North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 180, 1907; Mathews, Handl. Birds Austral., p. 99, 1908; Macgillivray, Emu, Vol. XIII., p. 180, 1914 (N.Q.); *id.*, *ib.*, Vol. XVII., p. 207, 1918 (N.Q.).

Entomyzon cyanotis cyanotis Mathews, Nov. Zool., Vol. XVIII., p. 421, 1912; *id.*, List Birds Austr., p. 290, 1913.

Entomyzon cyanotis connectens Mathews, Nov. Zool., Vol. XVIII., p. 421, Jan. 31st, 1912: Inkerman, Queensland; *id.*, List Birds Austr., p. 290, 1913.

Entomyzon cyanotis harterti Mathews, Nov. Zool., Vol. XVIII., p. 421, 1912; *id.*, List Birds Austr., p. 291, 1913.

Entomyzon cyanotis albipennis Mathews, Nov. Zool., Vol. XVIII., p. 422, 1912; *id.*, List Birds Austr., p. 291, 1913.

Entomyzon cyanotis subalbipennis Mathews, Nov. Zool., Vol. XVIII., p. 422, Jan. 31st, 1912: Parry's Creek, North-west Australia; *id.*, List Birds Austr., p. 291, 1913.

Entomyzon cyanotis apsleyi Mathews, Austral Avian Record, Vol. I., pt. 2, p. 51, April 2nd, 1912: Melville Island; *id.*, List Birds Austr., p. 291, 1913.

Entomyzon cyanotis hedleyi Mathews, Austral Avian Record, Vol. I., pt. 4, p. 101, Sept. 18th, 1912: Cape York, Queensland.

DISTRIBUTION. Eastern Australia from Cape York, Queensland, to Victoria. Northern Territory and North-west Australia.

Adult male. General colour of the upper-surface including the mantle, back, scapulars, rump, upper tail-coverts, tail and wings yellowish-green; marginal wing-coverts and bastard-wing blackish-brown; inner webs of flight-quills dark brown with buff on the basal portion of the primaries; tail-feathers whitish at the tips with dark shafts, and inclining to dark brown on the inner webs; top of head, lores, sides of face, sides of neck, nape and hind-neck black; a patch on the sides of the hinder crown, a streak on the sides of the throat and sides of neck white like breast,

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abdomen, sides of body, thighs and under tail-coverts; chin blackish with hair-like tips to the feathers; throat and fore-neck dark slate-grey with blackish shaft-lines; axillaries and under wing-coverts dark brown; under-surface of flight-quills also dark brown with a patch of buff towards the base; lower aspect of tail greyish-brown with whitish tips to the feathers. Eyes and feet grey, bill, black tip (to nostrils), remainder pale bluish-white. Eye-space below eye deep blue, above pale blue. Total length 314 mm.; culmen 30, wing 154, tail 125, tarsus 33. Figured. Collected at Inkerman, North Queensland, on the 16th of April, 1907, and is the type of *E. c. connectens*.

Adult female. Similar to the adult male.

The young take on the adult plumage from the nest. The head-feathers, which in the adult are black, are in the young brown, and the throat-feathers only greyish.

A young bird has the tip of the bill to the nostrils black, remainder yellow. The eye-space in a line above the eye bright yellowish-green; below this brownish green. Legs pale brownish olive-green. Eyes pale creamy-yellow; eye-lid nearly black.

Nest. "Usually this relines with strips of bark the deserted tenement of *Pomatostomus temporalis* or forms its nest in a depression at the top of the stick- and twig-built nest of this species. It is formed on an oblong platform of sticks and twigs eighteen inches in length, nine inches in width by six inches in depth, and is cup-shaped in form in the centre, made of strips of bark, the inside being lined with finer strips and shreds of bark, dried grass stems and horseshair, averaging externally six inches in diameter by three inches and three-quarters in depth and is compactly built, strips of bark being intermingled throughout the centre of the foundation." (North.)

Eggs. "Two form a clutch, oval or elongate-oval in form, the shell being close-grained, smooth and slightly lustrous. They vary in ground-colour from a rich salmon to a pale fleshy-buff, and typically are sparingly but distinctly spotted and blotched with purplish-red or chestnut-brown, intermingled with a few underlying markings of a fainter hue; the latter in some specimens are bluish-grey. 32-33 mm. by 24. (ib.).

Breeding-season. June to December (January).

THIS is yet another striking looking bird which received three names from Latham, as he examined drawings and paintings made from different specimens by different people. Thus, upon the examination of some drawings made by General Davies he based his Blue-eared Grakle; one of the three birds named in connection with his note I have already given under a preceding species, *Myzanthus melanocephala*. Then from the drawings of Mr. Lambert he described his Blue-cheeked Bee-eater and also his Blue-cheeked Thrush. No notes were given of its habits and apparently Latham did not recognise Watling's painting No. 132, which Sharpe has referred here, and quoted Watling's note as follows: "The yellow or willow-green about the eye is entirely bare of feathers, resembling much yellow morocco leather. The white on the vertex forms a crescent, with its concave side towards the bill, the dark feathers from which to the bill are very short and thin and of a deep lead colour. The belly and feathers of the tail about the vent are white,

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except just under the lower mandible, where they are of a deep lead colour for about $1\frac{1}{2}$ inches running down the breast. It has only one shrill whistling note, which it is constantly repeating. It hops like a Magpie, has a feathered tongue, catches flies and insects of every kind, on which it principally lives, and I am rather inclined to think sometimes kills and eats small birds, from its attacking a Warbler I one day put into the cage, where I kept it for some time after being wounded. This bird is very rare, and the only one seen."

Caley's notes read: "This bird is called *Bati-kin* by the natives. Whether it is migratory or not it would be hazardous for me to say, as I have only seen it occasionally, although in different places. I once observed several of them frequenting a tree, where they were busy in obtaining something that appeared to have exuded from a wounded part. I do not know what the substance could be, otherwise than a kind of gum of a bitter and astringent taste."

Gould's notes are as follows: "This attractive and beautiful Honey-eater, one of the finest of the *Meliphagidæ*, is strictly indigenous to New South Wales, where it is abundant and very generally dispersed; I observed it in nearly every part of the colony I visited, both in winter and summer. I also shot a single specimen on the N^omoi, but as this was almost the only one I saw beyond the mountain ranges, I believe its most natural habitat to be the great dividing chain of mountains and the sea. In all probability it may be found far to the northward on the eastern coast, but it has not yet been observed in South Australia, neither is it an inhabitant of Tasmania. In habits and actions the Blue-faced Honey-eater bears a striking resemblance to the members of the genera *Ptilotis* and *Melithreptus*; like them, it is found almost exclusively on the *Eucalypti*, searching among the blossoms and smaller leafy branches for its food, which is of a mixed character, consisting partly of insects and partly of honey, and probably berries and fruits, but this latter supposition I was not able to verify. I have frequently seen eight or ten of these bold and spirited birds on a single tree, displaying the most elegant and easy movements, clinging and hanging in every variety of position, frequently at the extreme ends of the small, thickly-flowered branches, bending them down with their weight; they may be easily distinguished from other birds with which they are frequently in company by their superior size, the brilliancy of their blue face, and the contrasted colours of their plumage; they are rendered equally conspicuous by the pugnacity with which they chase and drive about the other species resorting to the same tree. It frequently utters a rather loud and monotonous cry, not worthy the name of a song. I observed a most curious fact respecting the nidification of this bird: in every instance that I found its eggs they were deposited on the

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deserted, dome-shaped, large nest of the *Pomatostomus temporalis*, so numerous in the Apple-tree Flats in the district of the Upper Hunter, never within the dome, but in a neat round depression on the top. I had many opportunities of driving the female off the nest, and I can therefore speak with confidence as to this fact. It commences breeding early, and rears at least two broods in the year; on reference to my notebook I find I saw fully-fledged young on the 19th of November, and that I took many of their eggs in December."

Capt. S. A. White writes: "*Entomyzon cyanotis*. Have met with this bird in Queensland, New South Wales, South Australia. As far as the latter State is concerned, I feel sure that this bird has come down the River Murray to the lower reaches only of late years, for I have been on the Murray River from time to time since 1882, and it is only within the last twelve years that I have met with it as low down as Mannum. The habits of this species seem the same in all the States mentioned above. They will frequent the flowering eucalypts for honey contained in the blossoms, and insects if there are any; they will also take berries, insects forming much of their food. At Leaton, N.S.W., I observed these birds hawking for insects. Several Blue-faced Honey-eaters were in a bushy-topped box-tree and in company with other species they sallied out and hovered here and there as they captured flying insect life."

Mr. J. W. Mellor has written me: "This bird is not so widely distributed as some of the other large Honey-eaters, being more local in its habits. I saw it along the River Murray in December, 1913, while going from Murray Bridge to near Renmark; the birds were scarce on the lower reaches of the river, but plentiful higher up stream. I was told it was the first season it had come so low down as Mannum, where I first came across it on that trip. It had been breeding in the immediate locality, as I secured a young bird that was being fed by its parents, on insects, as it flew about the larger gum-trees uttering a plaintive call to the old birds. The latter were extremely pugilistic towards the other birds which came near, and would dart at them from time to time and drive them away. The bare space around the eyes of the old birds was a brilliant colour of peacock- and indigo-blues of various shades, tinged with yellow, thus causing a greenish shade in places; at death these elegant colours quickly faded. The female is not so bright in coloration, resembling more the young birds in the colour of the face."

Mr. A. H. Mattingley has also sent me details of coloration of the soft and facial parts of old and young birds, and Mr. H. L. White also forwarded me S. W. Jackson's data with sketch. All agree as to face coloration, but Mellor gives bill of male as whitish-blue at the base, very dark horn at the tip, and feet bluish-horn. Mattingley states lower mandible near gape cærulean-blue, both mandibles from base to nostrils whitish cobalt-green, tip black, and

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legs and feet ashy-grey, while Jackson agrees with Mellor as to bill coloration, but calls the legs pale olive-brown.

Mr. E. J. Christian has written me: "They have a loud call, 'tweet' like a canary, but much louder. They are to be seen here practically all the year round, but mostly in summer. I think they wander about chiefly in search of food. At Christmas time they are attracted here by the many flowering eucalypti and also by the fruit. They become a great nuisance, especially to quinces and peaches. They are generally seen in small flocks."

Mr. F. E. Howe wrote: At the Murray Swamps adjacent to Picola in Victoria this form was very plentiful in the tall timber, and their peculiar harsh call was heard all day long."

Mr. Thos. P. Austin's notes read: "A permanent resident of this district, Cobbora, New South Wales, and always found here in fair numbers; usually met with in pairs or small flocks of about half a dozen birds. They prefer the more open forests; seldom seen in the ironbark ranges where there is thick undergrowth. When the grapes are ripe they come into my garden to feast upon them. They breed here freely, and although I have examined many of their nests I have never known them entirely to build one for themselves, always using an old Babbler's, enlarging the entrance and relining it with bits of bark and dry grass, in which they lay two eggs for a sitting, and I have found nests containing eggs from August 22nd till October 25th."

Captain S. A. White has recorded: "This bird was met with just after leaving Mannum. This is by far the lowest point down stream it has been known to come. James Cockerell collected it at Mildura, but that is hundreds of miles up stream. The young were with the parent birds, showing that they must have nested in the locality," and later from Lake Victoria and the Murray River added: "These birds were very numerous round Lake Victoria, and their noisy yet musical note was often heard. They are very pugnacious. Although no nests were seen I am sure they were breeding by their antics."

The Brothers Harvey have written from Mackay, Queensland: "This large and interesting Honey-eater is always found in the immediate neighbourhood of the *Pandanus* palm—so much so, in fact, that it is known to most people in this locality as the 'Pandanus Bird.' Not only do they build their nests in these palms, but during the non-breeding season they derive an easy living from the many species of insects which shelter among the leaves. Occasionally, as the opportunity presents itself, they vary their diet with a little ripe fruit or the nectar from blossoms. These birds have a peculiar habit of performing an ecstatic dance or 'corroboree' in mid air. This antic is performed by a dozen or more *Entomyzas*, and at various times during the non-breeding season. One bird generally takes the lead and flies up skyward,

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calling excitedly to the others, who immediately take wing and follow their leader to a height of from 30 to 40 feet above the tree tops, where an excited corroboree takes place. Why they do this is a moot point, but it appears to us to be merely an overflow of mirth. Another peculiarity of this bird is its primitive method of nest-building. It is unable to suspend its nest from a branch as other Honey-eaters do, but as time goes on it may evolve this habit. In the Mackay district it usually builds its nest in the *Pandanus* or screw-palm. It will also build in a hollow spout or reline other birds' nests, such as the Magpie Lark, Friar Bird, Little Friar Bird and Butcher Bird. On one occasion we discovered a nest on a paper-bark (*Melaleuca*) which appeared to have been built by a pair of *Entomyzas*, but closer investigation revealed the outline of a Little Friar Bird's nest. This Honey-eater is a favourite with the Koel Cuckoo. One nest we observed contained two eggs of the Koel as well as a full clutch of the foster parents' eggs."

Gilbert discovered a distinct form which Gould described as a separate species, writing: "Exhibits as many specific differences from the *E. cyanotis*, that it is almost impossible for one to be mistaken for the other; in the first place it is smaller in size, and in the next the tints of the plumage are more strongly contrasted; besides which, the white at the basal portion of the quills is a character which will at all times distinguish it from its near ally. So far as is yet known, its habitat is confined to the northern coast of Australia, where it is said to be rather abundant, particularly in the neighbourhood of the settlement at Port Essington. Gilbert states that it 'is one of the first birds heard in the morning, and often utters its plaintive *peet* half an hour before daylight; but as soon as the sun is fairly above the horizon its note is changed to a harsh squeaking tone, which is frequently uttered while the bird is on the wing, and repeated at intervals throughout the day; it often takes long flights, mounts high above the trees, and then progresses steadily and horizontally. It is mostly met with in small families of from six to ten in number, frequenting the topmost branches of the loftiest trees and is seldom seen on or near the ground!'"

Mr. J. P. Rogers wrote me from Melville Island: "Nov. 20th, 1911. Cooper's Camp. This species has not been numerous up to the present and is usually seen in small parties up to half a dozen individuals in the forest country. Dec. 10th. Where trees are in bloom this species is numerous, especially on a small creek two miles north of here. Jan. 13th, 1912. This species was very numerous on the north side of the island, where many trees were in blossom."

Under the name *E. albipennis*, Barnard recorded from Cape York: "Fairly plentiful in forest country, and on the west coast of Cape York Peninsula, feeding on the blossoms of the red-flowered tea-tree (*Melaleuca*).

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One pair had, in an old nest of *Pomatorhinus rubeculus*, two young birds. This bird may prove to be *E. harterti*."

Macgillivray from Cape York called it *Entomyza harterti*, writing: "Numerous from 16 miles on Cape York telegraph line to the Jardine River, and at Loekerbie, when the tea-tree is in bloom. This bird very closely resembles *E. cyanotis*, *E. albipennis* not being found on the Cape York Peninsula. Only one nest was found near the Jardine River, in an old Babbler's nest, it contained two eggs only. ♀ Irides silvery cream-colour; bare skin above eye pale greenish-blue, below the eye deep sky-blue; bill black, base of bill pale greenish-blue; legs pale slate. Stomach contents, honey and insects," later adding "Common on the Archer River."

Barnard wrote that *Entomyza albipennis* was fairly common about Borroloola, on the McArthur, while H. L. White recorded McLennan's notes that a few birds were seen at Cape Shield, 28/8/15; Port Bradshaw, 1/9/15; and Liverpool River, 21/9/15, and were occasionally seen in the forest at King River.

From Cardwell district many years ago Ramsay recorded: "*Entomyza cyanotis* (?). While in the open forest country near the heads of the Herbert River I met with species of *Entomyza* on several occasions, but regret we did not shoot any, having nothing smaller than a revolver in the shape of firearms with us. I am not by any means sure that the species was *E. cyanotis*, and am more inclined to consider it *E. albipennis*."

Robinson and Laverock, a quarter of a century later, named the specimens from Cooktown on account of the paler buff inner edgings of the primaries and their smaller size wing, 135-161 mm. and tail, 108-112 mm., calling it *Entomyza cyanotis harterti*.

At that time *E. albipennis* was also considered only subspecifically distinct, and so in my "Reference List" in 1912 I followed this conclusion, allowing five subspecies.

Entomyzon cyanotis cyanotis (Latham)

New South Wales, Victoria.

Entomyzon cyanotis connectens Mathews.

"Differs from *E. c. cyanotis* in its smaller size and paler coloration of the inner webs of the primaries, but larger than *E. c. harterti*, and with darker inner-web coloration than in that form. Inkerman, Queensland."

Mid-Queensland.

Entomyzon cyanotis harterti Robinson and Laverock.

North Queensland.

Entomyzon cyanotis albipennis Gould.

Northern Territory.

Entomyzon cyanotis subalbipennis Mathews.

BLUE-FACED HONEY-EATER.

"Differs from *E. c. albipennis* in its larger size and heavier bill. Parry's Creek, North-west Australia."

North-west Australia

I later added

Entomyzon cyanotis apsleyi.

"Differs from *E. c. albipennis* in its smaller size."

Melville Island.

and

Entomyzon cyanotis hedleyi.

"Differs from *E. c. harterti* in its smaller size and thinner bill. Cape York."

Cape York, North Queensland.

In my 1913 "List" I still accepted the above arrangement, but synonymised the last named with *E. c. harterti*. I would now recognise the seven subspecies and maybe some others should be added.

The only recent criticism is a report upon birds from the King River: "*Entomyza albipennis* Gould. One ♂, wing 150 mm.; 2 ♀♀. The white-winged *Entomyza* appears to be confined to the northern centre and North-west Australia with no discernible subspecific difference, while the bigger brown-winged birds range Eastern Australia from north to south."

The brown-winged birds from Cooktown do not measure as much as 150 mm. in the wing, so cannot possibly be called "bigger."

GENUS—PLECTORHAMPHUS.

PLECTORAMPHUS Gray, List Genera Birds, 1st ed., p. 16, April 1840. New name for *Plectorhyncha* Gould. Type (by original designation) *Plectorhyncha lanceolata* Gould.

Also spelt—

Plectorhamphus Strickland, Annals Mag. Nat. Hist., Vol. VI., p. 419, 1841.

Plectrorhamphus Gray, Handl. Gen. Sp. Birds, pt. I., p. 161, 1869.

Plectorhyncha Gould, Synops. Birds Austr., pt. IV., pl. (70), April 1st, 1838. Type (by monotypy) *P. lanceolata* Gould.

Also spelt—

Plectrorhyncha Bonaparte, Consp. Gen. Av., Vol. I., p. 393, 1851.

Plectorhynchus Gray, Handl. Gen. Sp. Birds, pt. I., p. 161, 1869.

Not *Plectorhinchus* Lacepède, Hist. Nat. Poissons, Vol. III., p. 134, 1802.

MEDIUM sized "Honey-eaters" with short pointed bills, long wings, long tail, and short stout legs and feet.

The bill is short, shorter than the head, straight dagger shaped, tip sharp yet shallowly notched posteriorly; the culmen semi-keeled, anteriorly laterally compressed with slight basal expansion; the edges of the upper mandible nearly straight; the nostrils in *short* narrow groove with a narrow linear slit and large operculum; the under mandible deep, upper and lower at the base equal to the width at the base, the interramal space feathered about one-third the length of the bill, rictal and nasal bristles minute.

The breast shows a lanceolate feathering.

The wing is long with the first primary short, but a little more than half the length of the second, the third a little longer, the sixth a little shorter, the second subequal with the seventh, the third, fourth and fifth subequal and longest; secondaries medium.

The tail is long and straight.

The legs are short and stout; the tarsus anteriorly shows seven distinct separated scutes, posteriorly bilaminate; the toes short, hind-toe and claw stouter and longer than middle toe and claw; claws rounded, not long, anterior toes delicate, inner shorter than outer, middle toe a little longer.

Order PASSERIFORMES.

No. 641.

Family MELITHREPTIDÆ.

PLECTORHAMPHUS LANCEOLATUS.

STRIPED HONEY-EATER.

(PLATE 513.)

PLECTORHYNCHA LANCEOLATA Gould, Synops. Birds Austr., pt. iv., pl. (70), April 1st, 1838: New South Wales.

Plectorhyncha lanceolata Gould, Synops. Birds Austr., pt. iv., 1838; *id.*, Proc. Zool. Soc. (Lond.), 1837, p. 153, Dec. 1838; *id.*, Birds Austr., pt. iv. (Vol. IV., pl. 47), Sept. 1st, 1841; *id.*, Handb. Birds Austr., Vol. I., p. 525, 1865; Ramsay, Proc. Zool. Soc. (Lond.), 1875, p. 596; *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 189, 1878; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 208, 1884; Ramsay, Tab. List Austr. Birds, p. 13, 1888; Hall, Key Birds Austr., p. 39, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 369, 1901; North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 152, 1907; Howe, Emu, Vol. VIII., pp. 136-7, 1909 (Vic.); Jackson, *ib.*, p. 242, 1909 (N.Q.); Macgillivray, *ib.*, Vol. X., pp. 90-2, 1910 (N.S.W.); Stone, *ib.*, Vol. XII., p. 116, 1912 (Vic.); Chandler, *ib.*, Vol. XIII., p. 43, pl. x., 1913 (Vic.); Campbell and Barnard, *ib.*, Vol. XVII., p. 31, 1917 (N.Q.); S. A. White, *ib.*, Vol. XVIII., p. 24, 1918 (S.A.); Gogerley, *ib.*, Vol. XXIII., p. 32, 1923.

Plectorhamphus lanceolatus Gray, List Genera Birds, 1st ed., p. 16, 1840; Mathews, Handl. Birds Austral., p. 92, 1908; Howe, Emu, Vol. IX., p. 233, 1910 (Vic.); Cleland, *ib.*, Vol. XII., p. 15, 1912 (Food); Wilson, *ib.*, p. 38 (Vic.); Jackson, *ib.*, pp. 68-78.

Plectorhyncha lanceolata lanceolata Mathews, Nov. Zool., Vol. XVIII., p. 395, 1912; *id.*, List Birds Austr., p. 262, 1913.

Plectorhyncha lanceolata neglecta Mathews, Nov. Zool., Vol. XVIII., p. 395, Jan. 31st, 1912: Adelaide, South Australia; *id.*, List Birds Austr., p. 263, 1913.

DISTRIBUTION. Eastern Australia from Mid-Queensland to South Australia. Not Tasmania.

Adult male. Top of head, fore-head, lores, and nape pale grey with blackish pear-shaped markings on the middle of the feathers; sides of face similar but whiter and of a much smaller pattern; sides of neck, hind-neck and mantle white with blackish centres to the feathers; back, scapulars and rump olive, the feathers broadly centred with black; upper tail-coverts similar with dark shaft-lines; lesser, median and greater upper wing-coverts olive like the outer edges of the flight-quills; primary-coverts black with clive margins and fringed with buff at the

THE BIRDS OF AUSTRALIA.

tips; inner-webs of flight-quills dark brown margined with white; tail hair-brown with pale edgings to the feathers, more broadly at the tips; sides of breast black with white margins to the feathers; chin and throat white with irregular dark spots and hair-like tips to the former; middle of breast white, the feathers narrow and lanceolate in form; abdomen, sides of body, thighs and under tail coverts greyish-white with dark shaft-streaks to the feathers; axillaries and under wing-coverts dull white more or less streaked with pale brown; under-surface of flight-quills hair-brown with buffy-white margins and pale shafts to the feathers; lower aspect of tail greyish-brown with buffy-white margins to the feathers; bill light slate-blue, feet light blue-grey, eyes light brown. Total length 206 mm.; culmen 15, wing 113, tail 103, tarsus 26. Figured. Collected at Gilgandra, New South Wales, in March, 1910.

Adult female. Similar to the adult male.

Immature male. Crown of head, hind-neck, sides of neck, mantle, and upper-back greyish-white with a ferruginous tinge on many of the feathers and a blackish pear-shaped spot on the middle of each feather; rump and upper tail-coverts pale ferruginous; upper wing-coverts pale brown tipped with pale ferruginous on the lesser and median series and margined with the same colour on the major coverts which forms a wing-bar; bastard-wing and primary-coverts blackish-brown narrowly fringed with pale ferruginous; flight-quills blackish-brown with pale margins both on the outer and inner webs; tail dark brown with pale margins to the feathers, becoming ferruginous at the tips; sides of the hinder-crown greyish-white; ear-coverts white with dark streaks; a dark streak from the lores which extends to below the ear-coverts where it is more pronounced; throat and entire under-surface greyish-white, somewhat darker on the breast on the sides of which some of the feathers have dark shaft-lines; under wing-coverts and margins of flight-quills below whitish, remainder of quill-lining greyish hair-brown; lower aspect of tail similar but much paler. Collected at Moree, New South Wales, in November, 1898.

Young birds are practically like the adults, allowing for immaturity.

Nestling. "Has the general colour above fulvous-brown with brownish-black centres to the feathers, those on the nape, hind-neck, and sides of the neck having whitish margins; upper wing-coverts and quills dark brown, broadly margined with fulvous at the tips; tail-feathers fulvous with brown centres; all the under-surface white with narrow brown shaft-streaks on some of the feathers on the breast." (North.)

Eggs. Three to four eggs form the clutch, rarely five. A clutch of three eggs taken on "Cambo Cambo Station," on the Moonie River, in North-western New South Wales, on the 16th of November, 1911, is of a very pale pinkish or warm white ground-colour, minutely spotted and speckled with numerous markings of reddish-brown and purplish-grey, and becoming more closely set together at the larger end of each egg. Long ovals in shape; surface of shell smooth and rather glossy. 23 mm. by 16.

Nest. A beautiful deep cup-shaped structure, composed of grasses and small roots, very neatly woven together with a cotton-like substance, sheep's wool, and often many Emu feathers are very carefully worked into the sides of the structure. Lined with grass and hair, and sometimes feathers. Generally placed at the extremity of a hanging branch of a Forest Oak (*Casarina* sp.) or Wattle (*Acacia* sp.), etc. Dimensions over all, 4 inches by 4½ inches deep, while some are slightly larger. The egg cavity is 3 inches across by nearly 4 inches deep.

Breeding-months. August to December.

STRIPED HONEY-EATER.

GOULD named this distinct genus before he went to Australia, and his field-notes constitute the first record of its history. He wrote: "The Liverpool Plains and the country immediately to the northward are, I believe, the only portions of the Australian continent in which this bird has been seen. I found it rather sparingly dispersed over the forests bordering the rivers Mokai and Namoi, and it appeared to increase in number as I descended the latter stream towards the interior. It was generally observed alone, or in pairs, keeping almost exclusively to the *Acacia* and *Eucalypti*. Its chief food is the pollen of flowers and insects, for procuring which and for constructing its beautiful nest its pointed spine-like bill is admirably adapted. I find it stated, in my notes taken on the spot, that this bird possesses the peculiar habit of sitting motionless amongst the thickest foliage of the topmost branches of the highest trees, where it cannot be seen without the closest observation, although its immediate locality is indicated by its powerful whistling note . . . So closely do the sexes resemble each other in colour, that by dissection alone can they be distinguished; the male, however, rather exceeds the female in size. . . The young, of which I killed several specimens in the month of January, had even at that early age assumed the general markings of the adult; and the circumstance of there being fully-fledged young and eggs at the same time, proves that these birds rear at least two broods in the season."

Mr. Thos. P. Austin has written me from Cobbora, New South Wales: "I found this species very numerous in the Bourke district; but here they are rather rare, though of late years there are always a few pairs to be met with in suitable country. I have seldom found them far away from sandy country where there are native cypress trees growing. They are usually met with in pairs or single birds. They have a loud shrill whistling note which is sometimes kept up off and on the whole day. When nesting some birds are very close sitters; for instance, on September 23rd, 1917, I found one of their nests about 30 feet from the ground at the extreme end of a long, thin, drooping branch of a large ironbark tree with the bird sitting. As I had no scooping rod or wire with me and was a long way from home I climbed the tree and cut off the branch, hoping to be able to hold it, but it was a little too heavy, so I had to let it go. Before I reached the ground I saw one of my spaniels go up to the nest and, much to my surprise, flushed the sitting bird, which had sat on the nest all the time. There were four eggs in the nest and only one was broken."

Mr. F. E. Howe wrote me: "This bird was exceedingly plentiful in the Mallee in October, 1909, and a few nests containing young were noticed, also one nest building. They much prefer the pines, and at the extremity of the limb suspend the nest."

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Captain S. A. White's note reads: "This is not a common bird in South Australia and is found very sparsely in the southern part of the state; observed on the lower reaches of the River Murray where I have found it breeding in the native pines (*Calitris*), a beautifully woven hanging nest composed of dry grasses, cobwebs, lined with flower down. The clutch is invariably three."

Mr. J. W. Mellor has sent me the following note: "These birds are nowhere seen in great numbers like some other members of the Honey-eating family, their habits being to dwell in pairs or scattered individuals, and prefer the moderately timbered country where their musical and warbling note is very pleasing to the ear and reminds one much of that of the Oriole, in fact at times I have been deceived by the near resemblance of the notes of this bird to those of the Oriole family. I have met the Striped Honey-eater in a number of places, more especially about the Lakes district of Lakes Alexandrina and Albert in South Australia where the country is timbered with scattered she-oak (*Casuarina*), backed up by tall mallee in the distance. The birds, I found, selected the pendent leaves of the she-oak in which to place their nests; these are somewhat peculiar in appearance, as the birds I noted used invariably a quantity of sheeps' wool in their construction, which reminded me of a white woolly ball of seed on the tree, and a marked contrast to the narrow, dark, green leaves of the she-oak, and could be seen at some distance away, consequently their nests are not hard to find in such localities as described. I have seen the bird at times at the Reedbeds, near Adelaide, during the winter, but I have never known it to breed here. The note is a beautiful, full, silvery warble of some volume, and is extremely pleasing to listen to on a fine crisp day, the notes having a peculiarly watery and melodious sound."

Ramsay wrote from the Roekingham Bay district in 1875: "Although I was not fortunate enough to meet with this fine species myself, I saw some fine specimens which had been procured some sixty miles inland. This species appears to confine itself to the west of the coast-range, and is met with occasionally about the heads of the Burnett River."

Chandler, from the Kow Plains, Victoria, wrote: "A common species. These shy birds frequented the pine forests to a large extent, and their nests were found suspended at the ends of pine branches. They made a great din in the morning, and their noisy notes were often heard through the day."

Campbell and Barnard have mentioned: "The occurrence of one or two of this usually inland species on Goold Island, near Hinchinbrook Island, and about 10 miles from the mainland, surprised us. We secured a specimen for identification, and saw it nowhere else. However, Ramsay stated it was to be found 60 miles inland. There had been a drought the previous season,

STRIPED HONEY-EATER.

and these birds may have been driven from their usual habitat, and finding existence on the island congenial, had there remained."

This peculiar form with a somewhat restricted range had no subspecies until in my "Reference List" in 1912 I named

Plectorhyncha lanceolata neglecta.

"Differs from *P. l. lanceolata* in its larger bill, and in being blackish-brown above. Adelaide, South Australia."

South Australia.

I still retained this in my 1913 "List," but now the genus name must be corrected, so that the names will read:

Plectorhamphus lanceolatus lanceolatus (Gould).

Queensland, New South Wales, Victoria.

Plectorhamphus lanceolatus neglectus (Mathews).

South Australia.

GENUS—MYZOMELA.

MYZOMELA Vigors and Horsfield,
 Trans. Linn. Soc. (Lond.),
 Vol. XV., p. 316, footnote,
 Feb. 17th, 1827. Type (by
 original designation).. .. *Meliphaga cardinalis* Vigors and Horsfield
 = *Certhia sanguinolenta* Latham.

VERY small "Honey-eaters" (probably Sun-birds) with long curved bills, short wings, short square tail and small legs and feet. The bill is delicate and well curved, equal to or a little longer than the head, anteriorly laterally compressed and curving gently downward, posteriorly straight and little basally expanded, where the nasal groove is long, the nostrils linear and the operculum leathery and prominent, nasal bristles missing and rictals obsolete: lower mandible delicate, the interramal space comparatively long and feathered almost one-third the length of the bill; depth at base of both the mandibles a little less than the width. Coloration showing more or less red.

The wing is short but really long for the size of the bird, the first primary very small, only about one-third the length of the second, which is about equal to the seventh, being less than the sixth; the third, fourth, and fifth are subequal and longest.

The tail is square and comparatively short.

The legs and feet are small, the tarsus shorter than the bill; the tarsus shows anteriorly half a dozen scutes with a tendency to booting, posteriorly bilaminate. The toes small, the claws rather long and sharp, the hind-toe and claw not longer than the middle toe and claw, the inner toe and claw shorter than the outer toe and claw and just exceeding the middle toe alone.

As above noted these may be Sunbirds, but at present I have no data on the subject, as when Forbes monographed the genus he gave no morphological details but mentioned the minutely serrate cutting edges of the mandible, which is a Nectarinioid feature.

Key to the Species.

Back black; red throat divided from under-surface	
by a black band	<i>M. erythrocephala</i>
Back red; no band dividing red throat from	
under-surface.. .. .	<i>M. sanguinolenta.</i>

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MYZOMELA ERYTHROCEPHALA
 (RED-HEADED HONEY-EATER)
 MYZOMELA SANGUINEOLENTA
 (SANGUINEOUS HONEY-EATER)

Order PASSERIFORMES.

Family MELITHREPTIDÆ.

No. 642.

MYZOMELA SANGUINOLENTA.

SANGUINEOUS HONEY-EATER.

(PLATE 515.)

CERTHIA SANGUINOLENTA Latham, Index Ornith. Suppl., p. xxxvii, after May 1801: New South Wales, based on Watling painting No. 109.

Certhia sanguinolenta Latham, Index Ornith. Suppl., p. xxxvii, 1801.

Certhia dibapha Latham, *ib.*: New South Wales.

Certhia erythropygia Latham, *ib.*, p. xxxviii: New South Wales.

Sanguineous Creeper Latham, Gen. Synops. Birds, Suppl. II., p. 167, 1801.

Cochineal Creeper Latham, *ib.*

Red-rumped Creeper Latham, *ib.*, p. 169.

Certhia australasiæ Leach, Zool. Miscellany, Vol. I., p. 30, 1814: New South Wales.

Meliphaga sanguinea Stephens in Shaw's Gen. Zool., Vol. XIV., pt. I., p. 263 (end), 1826: New South Wales.

Meliphaga cardinalis Vigors & Horsfield, Trans. Linn. Soc. (Lond.), Vol. XV., p. 316, 1827. (Not of Gmelin.)

*Myzomela sanguinolenta** Gould, Birds Austr., pt. XI. (Vol. IV., pl. 63), June 1st, 1843; *id.*, Handb. Birds Austr., Vol. I., p. 555, 1865; Ramsay, Ibis, 1865, p. 304; *id.*, Proc. Zool. Soc. (Lond.), 1875, p. 597 (N.Q.); *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 190, 1878; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 131, 1884; Ramsay, Tab. List Aust. Birds, p. 14, 1888; Hall, Key Birds Austr., p. 37, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 352, 1901; Somerville, Emu, Vol. II., p. 104, 1902 (Vic.); Berney, *ib.*, Vol. V., p. 75, 1905 (N.Q.); North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 92, 1906; Mathews, Handl. Birds Austral., p. 93, 1908; E. D. Barnard, Emu, Vol. VIII., p. 215, 1902 (Q.); Broadbent, *ib.*, Vol. X., p. 239, 1910 (N.Q.); Macgillivray, *ib.*, Vol. XIII., p. 176, 1914 (N.Q.); Campbell and Barnard, *ib.*, Vol. XVII., p. 31, 1917 (N.Q.); Ramsay, *ib.*, Vol. XIX., p. 6, 1919 (N.S.W.); S. A. White, *ib.*, p. 225, 1920 (Q.); Le Souëf and Macpherson, *ib.*, Vol. XX., p. 90, 1920 (N.S.W.).

* Sometimes spelt *sanguineolenta*.

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- Myzomela sanguinolenta sanguinolenta* Mathews, Nov. Zool., Vol. XVIII., p. 395, 1912;
id., List Birds Austr., p. 263, 1913; Belcher, Birds Geelong, p. 330, 1914.
Myzomela sanguinolenta stephensi Mathews, Nov. Zool., Vol. XVIII., p. 395, Jan. 31st,
1912: Cooktown, North Queensland; *id.*, List Birds Austr., p. 263, 1913.

DISTRIBUTION. Eastern Australia from Cape York to Victoria.

Adult male. Entire top of head, nape, sides of face, chin, throat and breast bright scarlet-red; eye-ring and narrow loreal-streak black; mantle, back, scapulars, rump and upper tail-coverts black with scarlet-red tips to many of the feathers; upper wing-coverts and innermost secondaries black with whitish edgings to some of the greater coverts; flight-quills blackish-brown with whitish margins on the inner webs; tail also blackish-brown; axillaries and sides of body ash-grey like the thighs; under tail-coverts greyish-brown broadly margined with buffy-white; under wing-coverts and margins of flight-quills below white; remainder of quill-lining hair-brown; lower aspect of tail similar; bill black, eyes and feet brown. Total length 110 mm.; culmen 14, wing 60, tail 36, tarsus 15. Figured. Collected at Cooktown, North Queensland, on the 16th of May, 1900, and is the type of *M. s. stephensi*.

Adult female. General colour of the upper-surface rust-brown, including the top of the head, sides of crown, sides of neck, hind-neck, entire back, scapulars, rump and upper tail-coverts; outer aspect of wings similar with pale edges to the greater wing-coverts; flight-quills blackish-brown with whitish margins; tail dark brown; under-surface of body ash-grey with dark bases to the feathers on the throat; axillaries, under wing-coverts and margins of flight-quills below white, remainder of quill-lining dark brown; lower aspect of tail similar but paler; bill black, eyes and feet brown. Total length 95 mm.; culmen 11, wing 55, tail 33, tarsus 17. Figured. Collected at Kuranda on the 10th of September, 1913.

Adult male. Entire head and neck all round vermilion-red, like the centre of the back, from the hind-neck to the upper tail-coverts; scapulars and wings black, the outer webs of the greater upper wing-coverts and flight-quills fringed with grey with a tinge of green on the latter; tail black, somewhat paler on the lateral feathers, some of which are edged with white at the tips; lores and eye-ring black; breast grey with red tips to the feathers; sides of body, abdomen, and under tail-coverts grey with a yellowish tinge; thighs soot-black; axillaries and under wing-coverts dull white; under-surface of flight-quills greyish-brown with white margins; lower aspect of tail dark hair-brown. Total length 105 mm.; culmen 12, wing 60, tail 38, tarsus 15. Collected on Toongabbie, New South Wales, in October, 1896.

Young males. "Resemble the adult females, but have the rump and upper tail-coverts ochreous-fulvous, the scarlet feathers first appearing about the chin and sides of the head and down the centre of the back, the black feathers on the sides of the latter appearing at the same time. When the entire head and neck all round is scarlet, there is only indications of the scarlet tips to the feathers of the fore-neck and breast." (North.)

Immature female. Crown of head and nape dusky-grey with red feathers interspersed; sides of face, chin, and throat similar, but the base of feathers paler than the top of the head and the red more uniform; mantle and back dusky-brown with a few red and blackish feathers intermixed; rump almost uniform red; upper tail-coverts blackish, some of which are tipped with white; upper wing-coverts black with pale margins to some of the median and greater series; bastard-wing and primary-coverts pale brown; flight-quills blackish-brown narrowly margined with olive-grey on the outer webs and fringed with white on the inner ones; tail

SANGUINEOUS HONEY-EATER.

also blackish-brown; fore-neck and breast grey with a slight appearance of black on the former and a tinge of yellow on the latter; abdomen, sides of body, and under tail-coverts whitish-grey more or less tinged with sulphur-yellow; axillaries, under wing-coverts, and inner margins of flight-quills below, white, remainder of quill-lining hair-brown; lower aspect of tail also hair-brown; eyes and feet brown; bill black. Collected at Cooktown, North Queensland, on the 16th of May, 1900.

Immature. General colour of the upper-surface smoke-brown including the entire top of the head, sides of face, sides of neck, hind-neck, and upper back, somewhat darker on the last and inclining to dark chestnut on the lower back, rump, and upper tail-coverts; upper wing-coverts pale brown margined with buff; flight-quills greyish-brown narrowly fringed with olive on the outer webs and white on the inner ones; tail hair-brown; chin and fore part of cheeks faintly tinged with pale red; throat and breast greyish-olive, becoming paler and inclining to greyish-white; under tail-coverts pale buff; axillaries, under wing-coverts, and margins of flight-quills below, white, remainder of quill-lining hair-brown; lower aspect of tail similar to its upper-surface. Collected at Beach Mount, Inkerman, North Queensland, in May, 1907.

Male juvenile. Crown of head and nape mouse-brown, inclining to chestnut on the forehead; mantle, back, rump, upper tail-coverts and outer aspect of wings dark smoke-brown; flight-quills blackish with olive-green margins on the outer webs and white on the inner ones; tail dark brown margined with chestnut-brown towards the base; chin, throat and cheeks cinnamon; hind-face like the crown of the head; fore-neck and chest pale grey tinged with cinnamon; lower breast, abdomen, and sides of body grey; flanks and under tail-coverts pale buff; axillaries, under wing-coverts, and inner margins of flight-quills below white; remainder of quill-lining blackish-brown; lower aspect of tail similar but somewhat paler; eyes hazel; bill dark yellowish-brown; feet greenish-grey, soles yellow. Collected at Mt. Elliot, Townsville, North Queensland, on the 5th of December, 1907.

Eggs. Two to three eggs form the clutch. A clutch of three taken at South Grafton, Clarence River, New South Wales, on the 11th of November, 1894, is of a white ground-colour, possessing the very faintest trace of a warm or pinkish tinge; spotted and speckled with dull chestnut, reddish-brown, and purplish-grey, forming well defined zones at the larger end of each egg. Rather roundish in shape, surface of shell smooth and rather glossy. 15-16 mm. by 12. Cooktown eggs taken on the 2nd of November, 1897, measure 14 mm. by 11.

Nest. Is a small cup-shaped structure, composed of thin strips of bark and small roots, and usually very sparingly lined with a little very fine grass, or a few rootlets, and sometimes horsehair. Usually suspended from the small forked horizontal twigs of a drooping branch of a bushy tree, a *Eucalyptus* being frequently resorted to for the purpose. The nest though very small is sometimes placed as high as 40 feet or more up from the ground. The dimensions over all are: 2 inches across by about 1½ inches in depth, and the egg cavity is 1½ inches across by nearly 1 inch in depth.

Breeding-months. October to December or January.

FIGURED in the Lambert and Watling drawings several times, probably on account of its attractive coloration, this species received three different names by Latham; the descriptions were not recognised until Gray, Strickland and Gould examined the drawings in 1843.

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Meanwhile, when Vigors and Horsfield examined the Australian birds in the Collection of the Linnean Society they named the species *Meliphaga cardinalis* as of Gmelin, the name given to a similar bird from the Island of Tanna in the Pacific Ocean. However, they proposed a new genus, *Myzomela*, for the species, and wrote: "Mr. Caley informs us that he did not himself meet many birds of this species, although he understood them to be plentiful; his not meeting them probably arose, as he says, from their being inhabitants of brushes. His researches were chiefly in the forest scrubs, where his specimens were procured. The colonists call this bird *Little Soldier*."

Gould's notes are rather brief: "This beautiful little bird is an inhabitant of the thick brushes of New South Wales, particularly those near the coast and those clothing the hilly portions of the interior, and I have reason to believe that it is rarely, if ever, found among the trees of the open parts of the country. I have not yet seen specimens from the western, and only a single example from the northern coasts, whence I infer that the south-eastern part of the continent is its natural habitat. It gives a decided preference to those parts of the forest that abound with flowering plants, whose fragrant blossoms attract large numbers of insects, upon which and the pollen of the flower cups it chiefly subsists."

Mr. J. W. Mellor has written me: "This beautiful little Honey-eater I have noted in both New South Wales and Queensland, where it was seen amongst the topmost branches of the very tall trees, feeding on the nectar of the flowers, and it was most difficult to obtain specimens, as the smallness of the bird and the great distance made it hard to discern them and still harder for the small charge to take effect. I noted that the birds were not then in full livery, there still being an amount of brown on the feathers. I later met with this little gem at Palm Grove, Ourimbah Creek, in the Hawkesbury district. Here the birds kept to the tall subtropical tree-tops, but occasionally they came down near the creek, presumably to drink, as the days were extremely hot. I secured two specimens and again noted they were not in full livery. This was in October and the previous time it was December."

Mr. L. G. Chandler wrote me: "In the year of the great drought (1902) many northern birds came into southern Victoria. These birds came in dozens. I saw the first bird while walking along a cattle track (in June) at the Basin, Dandenong Ranges. It was a male extracting the nectar from the bells of a white heath; the picture was perfect, the blood-red head glowing brightly against the snowy whiteness of the flower. Looking round, I noticed the heath was alive with many dozens of these birds."

Captain S. A. White has written me: "This glorious little bird is fairly plentiful in Southern Queensland and the islands near the coast. It generally keeps well up in the tops of the trees where its striking plumage makes it appear

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like sparks of fire moving about. The song is loud for so small a bird and is very sweet and at times long sustained."

Berney wrote from the Richmond District, North Queensland: "I found an individual resting, weak and dazed, on the verandah at Wyangarie, which died a couple of hours later, from simple poverty, it seemed. It was an entire stranger to me, and must, I think, have been considerably out of its beat. It was a young bird."

In 1908 Ernest D. Barnard wrote from Kurrajong, Gladstone, Queensland: "Blood Honey-eaters (*Myzomela sanguinolenta*) were very numerous this year. They showed a partiality for clumps of scrub, patches of brigalow chiefly, dotted about the open country, and did not seem to care for the larger scrubs. I have never observed them here before, so their visit was a pleasant surprise. Two nests with eggs were seen, both in brigalows."

Macgillivray has written: "At Cairns, on the 17th November, 1909, they were numerous in the mangroves."

Ramsay in 1875 from the Cardwell district recorded: "During the months of April and May, 1874, this bird was found by no means rare, feeding among the blossoms of *Lophostemon*, *Melaleuca*, and *Eucalyptus* in the neighbourhood of Cardwell and on the Herbert River. They arrive about Sydney during the months of October and November, and, remaining, breed during November, December, and as late as January."

Campbell and Barnard's note from the same district reads: "Whether for appearance or pleasing song (like the sound produced by a person rubbing a damp cork on a window-pane, only not so harsh) these little Honey-eaters are gems, and the rich red portion of the uniform brightens the picture wherever they fly for nectar, whether on to cylindric, greenish tea-tree flowers or golden bunches of gum blossom, or are 'drowned' in their own colour in the red bottle-brush of *Callistemon*."

Captain S. A. White reported from Stradbroke Island: "These little jewels in bird life were fairly numerous, their bright red plumage drawing much attention. They generally keep to the foliage growing on the tops of the trees, where they move about very rapidly. They have a remarkably loud and shrill call for so small a bird."

Le Souëf and Macpherson, writing about the Birds of Sydney whence this bird was first described, observe: "The brightest of the Honey-eaters, the Sanguineous Honey-eater, arrives from the north in numbers in September, and a few take up their quarters in the city parks. The male bird is very conspicuous, and whistles constantly, but the female is not so often seen. About the middle of the season they become quiet, and this year a small flock was seen on its way north again in February."

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J. Ramsay, the son of the famous E. P. Ramsay previously quoted, has noted among the Birds of the Upper Clarence River District: "A number of males were noted, in which the cap of the head, nape, and a narrow line running down to the back of the neck was a bright golden yellow, caused by the pollen of wild flowers (probably 'native passion fruit') accumulating in the feathers. On shooting a specimen the pollen was found like a yellow powder, and so heavy that it would fall out if the bird was laid on its back."

Owing to its restricted range, though this species received five names by the earliest workers, these were all based on plumage changes from the same locality, so that they were all absolute synonyms.

In my "Reference List" in 1912 I separated

Myzomela sanguinolenta sanguinolenta (Latham).

South Queensland, New South Wales,
Victoria.

Myzomela sanguinolenta stephensi Mathews.

"Differs from *M. s. sanguinolenta* in the red on the under-surface extending down on to the abdomen. Cooktown, N. Queensland."

North Queensland.

In my 1913 "List" I made no alteration, and recently Campbell and Barnard have written: "We could not separate it from the southern form, the reason for separation given by Mathews being the extension of red further down the abdomen. This trivial reason was not convincing," Apparently they did not compare toponotypical birds at all.

Order PASSERIFORMES.

Family MELITHREPTIDÆ.

No. 643.

MYZOMELA ERYTHROCEPHALA.

RED-HEADED HONEY-EATER.

(PLATE 515.)

MYZOMELA ERYTHROCEPHALA Gould, Proc. Zool. Soc. (Lond.), 1839, p. 144, March 1840 :
Port Essington, Northern Territory.

Myzomela erythrocephala Gould, Proc. Zool. Soc. (Lond.), 1839, p. 144, 1840 ; *id.*, Birds Austr., pt. XI. (Vol. IV., pl. 64), June 1st, 1843 ; *id.*, Handb. Birds Austr., Vol. I., p. 556, 1865 ; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 190, 1878 ; Forbes, Proc. Zool. Soc. (Lond.), 1879, p. 262 ; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 133, 1884 ; Ramsay, Tab. List Austr. Birds, p. 14, 1888 ; Hall, Key Birds Austr., p. 37, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 353, 1901 ; North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 95, 1906 ; Hall and Rogers, Emu, Vol. VII., p. 139, 1908 (N.W.A.) ; Mathews, Handl. Birds Austral., p. 93, 1908 ; Hill, Emu, Vol. X., p. 284, 1911 (N.W.A.) ; *id.*, *ib.*, Vol. XII., p. 259, 1913 (N.T.) ; Macgillivray, *ib.*, Vol. XIII., p. 176, 1914 (N.Q.) ; H. L. White, *ib.*, Vol. XVI., p. 227, 1917 (N.T.) ; Macgillivray, *ib.*, Vol. XVII., p. 204, 1918 (N.Q.) ; Campbell, *ib.*, Vol. XVIII., p. 185, 1919 (N.T.) ; *id.*, *ib.*, Vol. XX., p. 63, 1920 (N.Q.).

Myzomela erythrocephala erythrocephala Mathews, Nov. Zool., Vol. XVIII., p. 395 ; *id.*, List Birds Austr., p. 263, 1912.

Myzomela erythrocephala kempi Mathews, Nov. Zool., Vol. XVIII., p. 396, Jan. 31st, 1912 :
Cape York, North Queensland ; *id.*, List Birds Austr., p. 264, 1913.

Myzomela erythrocephala derbyi Mathews, Nov. Zool., Vol. XVIII., p. 396, Jan. 31st,
1912 : Derby, North-west Australia, ; *id.*, List Birds Austr., p. 263, 1913.

Myzomela erythrocephala melvillensis Mathews, Austral Avian Record, Vol. I., pt. 2, p. 48,
April 2nd, 1912 : Melville Island ; *id.*, List Birds Austr., p. 263, 1913.

DISTRIBUTION. Northern Australia from Derby, North-west Australia to Cape York,
North Queensland.

Adult male. Top of head, sides of face, chin and throat bright red, intermixed with black on the nape like the rump and upper tail-coverts ; lores, eye-ring, fore-neck and upper wing-coverts black ; primary-coverts and flight-quills blackish-brown with white margins to the inner-webs of the latter ; tail also blackish-brown, the outermost feather on each side white and some of the other feathers slightly marked with white at the tips ; breast, sides of body, abdomen, thighs and under tail-coverts

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dusky-brown; axillaries pale drab-grey; under wing-coverts white; under-surface of flight-quills dark brown with whitish margins; lower aspect of tail similar to its upper-surface. Bill and eyes black, feet brown. Total length 105 mm.; culmen 14, wing 61, tail 42, tarsus 16. Figured. Collected at Cape York, North Queensland, on the 10th of August, 1913.

Adult female. Fore-part of head, chin and fore-part of cheeks dull red; hinder-crown, sides of face, hind-neck, back, wings, upper tail-coverts and tail dusky-brown; inner webs of flight-quills darker and inclining to blackish-brown with whitish margins; throat, sides of neck and breast ash-grey; breast, abdomen, sides of body, thighs and under tail-coverts whitish-grey; axillaries, under wing-coverts and inner margins of quills below white, remainder of quill-lining dark brown like the lower aspect of the tail. Eyes brown, feet olive, tarsi leaden-blue, bill black, lower base and base of mandible yellow. Total length 105 mm.; culmen 13, wing 55, tail 36, tarsus 15. Figured. Collected on Melville Island, Northern Territory, on the 28th of November, 1911.

Adult male. Head and neck all round vermilion-red; lores and eye-ring black; rump and upper tail-coverts vermilion-red like the head; sides of neck, mantle, back, scapulars, and wings soot-black, paler on the outer edges of the flight-quills, inner margins fringed with greyish-white; tail also soot-black; the fore-neck adjoining the red of the throat soot-brown; breast, abdomen, and sides of body dusky-grey, becoming paler on the middle of the lower abdomen, vent, and under tail-coverts; axillaries, under wing-coverts, and margins of flight-quills below white, remainder of quill-lining dark hair-brown, like the lower aspect of the tail. Eyes brown, feet and legs brown, bill black, lower mandible brown. Total length, 113 mm.; culmen 13, wing 60, tail 41, tarsus 18. Collected at Point Torment, North-west Australia, on the 17th of January, 1911, and is *M. e. derbyi*.

Immature male. General colour of the upper-surface pale earth-brown including the hinder-crown, nape, hind-neck, sides of neck, back, wings, and tail; rump and upper tail-coverts inclining to smoke-brown; inner-webs of flight-quills dark brown fringed with white; fore-part of head red; lores and space above the eye like the nape and sides of the neck; chin, throat, and cheeks red; fore-neck and breast dull grey becoming paler and inclining to whitish on the abdomen; flanks, and under tail-coverts, under wing-coverts and margins of quills below white; under-surface of flight-quills hair-brown; lower aspect of tail similar to its upper-surface but rather paler. Eyes brown, bill brown, corner of mouth yellow, feet and legs olive-brown. Collected at Derby, North-west Australia, on the 13th of January, 1904.

Immature female. General colour of the upper-surface earth-brown including the top of the head, nape, hind-neck, sides of neck, wings and tail; some of the upper wing-coverts fringed with whitish and some of the flight-quills similarly margined; tail hair-brown; fore-part of head, chin, throat and fore-parts of cheeks red; lores and space above the eye similar to the crown; fore-neck and breast dull grey with white tips to some of the feathers of the former; abdomen, sides of body, and under tail-coverts buffy-white; axillaries, under wing-coverts, and margins of the flight-quills below white, remainder of quill-lining hair-brown; lower aspect of tail similar to its upper-surface but somewhat paler. Eyes brown, feet and tarsus olive-brown, bill brown, lower base yellow. Collected at Point Torment, North-west Australia, on the 20th of February, 1911.

Eggs. Two eggs usually form the clutch. A pair taken at Port Darwin, Northern Territory, on the 27th of December, 1908, is of a white ground-colour, finely spotted with pale chestnut, reddish-brown, and purplish-grey; the markings being chiefly

RED-HEADED HONEY-EATER.

confined to the larger end of both eggs. Swollen ovals in shape, surface of shell fine and smooth, and slightly glossy. 15 mm. by 12.

Nest. Similar to that of *M. s. sanguineoleuta*.

Breeding-months. October to January.

THIS beautiful species was apparently discovered by Gilbert, as Gould's note reads: "The Redheaded Honey-eater is so distinctly marked as almost to preclude the possibility of its being confounded with any known Australian species of the genus. The northern portion of the country appears to be its true habitat, all the specimens that have come under my notice having been procured at Port Essington, where it is exclusively confined to the extensive beds of mangroves bordering the inlets of the sea. From the flowers of these trees it collects its favourite food, which, like that of the other species of the group, consists of insects and honey. It is a most active little creature, flitting from one cluster of flowers to another, and from branch to branch with the greatest rapidity, uttering at the same time its rather sharp and harsh chirrup. Gilbert states that it is far from being abundant, and is so seldom seen near the settlement that no examples had been procured prior to his visit."

Mr. J. P. Rogers wrote me from Derby, North-west Australia: "These birds frequent mangrove scrub and I have never seen them elsewhere. They are not numerous, but I see a few every day." From Melville Island he wrote: "Cooper's Camp. Up to Nov. 20, 1911, this species was very numerous, and on the 15th Dec. was still numerous. Is nearly always found in the mangroves and I have seldom seen it elsewhere and then only at a very short distance from its favourite haunts. None were seen on the north side of the island, but there I was not near the sea or salt creeks (tidal) so there were no mangroves. At Cooper's Camp on Jan. 28, 1912, is still in the mangroves but not so numerous as in December."

Previously: "In the thick scrub of the Stewart River was difficult to collect. It was very tame and quite numerous, but always at the muzzle of the gun before it could be seen. A few feet is the usual range of sight."

Hill wrote from Kimberley, North-west Australia: "A resident and fairly plentiful species in the mangroves from Derby northwards. They rarely leave the mangroves, and when they do so it is only to visit flowering eucalypts close by. The denseness of the foliage renders it almost impossible to watch their movements or to locate their nests, which are generally placed in the tops of the highest mangroves. The heads of female birds are always tinged with red. A regular supply of honey is obtainable from the mangrove flowers, and it is from these that most of their food is obtained throughout the year."

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Hill later wrote : " These birds inhabit the mangroves along the banks of the lower McArthur River, Northern Territory."

Macgillivray wrote : " Noted at Cape York very few in 1910-11, but became numerous afterwards. They also frequent the mangroves. Stomach contents, honey and small insects." . . . " The beautiful little Redheaded Honey-eater frequents the mangroves and the scrub growing on the islands near the coast. We first met with it in the mangroves 50 miles south of Lloyds' Bay. On Haggerstone Island numbers were feeding on some flowering trees. On the Archer River Mr. McLennan found them to be plentiful in the mangroves. He found one building in a tea-tree near the camp on 3rd August ; by the 7th the nest was completed and contained one egg."

H. L. White recorded McLennan's notes on his King River trip. " Little Archer River, 6/7/15. Noted in mangroves. Bickerton Island, 23/8/15; Goyder River, 7/9/15; and Liverpool River, 19/9/15. A few noted in mangroves. King River. Numerous in mangroves and in the flowering trees along river. Stomach, small beetles and other insects."

This bird had been little studied when I prepared my " Reference List" in 1912, and I found that it was easily separable into subspecies, and I named

Myzomela erythrocephala erythrocephala Gould.

Northern Territory.

Myzomela erythrocephala kempfi Mathews.

" Differs from *M. e. erythrocephala* in its paler coloration, though darker than *M. e. derbyi*, and in its shorter bill. Cape York."

North Queensland.

Myzomela erythrocephala derbyi Mathews.

" Differs from *M. e. erythrocephala* in its paler coloration above and below, and in that the pectoral band is only indistinctly indicated. Derby, North-west Australia."

North-west Australia.

A little later I added

Myzomela erythrocephala melvillensis Mathews.

" Differs from *M. e. erythrocephala* in its much darker back and wings."

Melville Island, Northern Territory.

I still admitted these in my 1913 " List."

Campbell has recently written from the King River collection : " Three ♂ ♂, one ♀. Fine skins. Gilbert found this beautiful little creature rare at Port Essington. Head deep spectrum-red, or between that colour and carmine, like the back of *Malurus cruentatus*. Can find no difference in North-west examples (*derbyi* Mathews). Moreover, North-west Australia is the actual type locality (see Gould, P.Z.S., 1839, p. 144) ; yet Gould, in his ' Handbook'

RED-HEADED HONEY-EATER

I., p. 556, states that all specimens that came under his notice were procured at Port Essington."

Port Essington is geographically in North-west Australia !

Later he wrote : " One ♂, 1 ♀. Both this and the preceding New Guinea and Australian Honey-eaters appear typical. This beautiful Honey-eater was occasionally seen on Moa Island."

The differences are easily seen.

GENUS—CISSOMELA.

CISSOMELA Bonaparte, Comptes Rendus Acad.

Sci. (Paris), Vol. XXXVIII., pp. 260-264,

Feb. 6th, 1854. Type (by original designation) *C. nigra* Bp. (not Gould) =
Myzomela pectoralis Gould.

BONAPARTE wrote : “ *Myzomela nigra* Gould, est pour moi le type du nouveaux genre *Cissomela* : *Cissomela nigra* Bp. ex Gould, Australia : *Minor* ; *nigra* ; *subtus cum uropygio albo, torque pectorali nigro.*”

The description given shows that Bonaparte had confused his species, and that his *C. nigra* was not that of Gould but was *Myzomela pectoralis* Gould.

The coloration and plumage changes separate this species widely from the preceding, which is at sight characterized by its shorter, stouter, less curved bill. In general structure it agrees with *Myzomela*, but it is quite possible that this species is not closely allied. As the bill is shorter and the nostrils are long, the nasal groove extends more than one-third the length of the bill, while the anterior portion is shorter and less curved and does not appear to show any fine serration on the edges.

The wing has a similar formula, the small first primary being less than one-third the length of the second, which is nearly as long as the third, fourth and fifth, which are longest.

The legs and feet are similar but a little stouter.

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CISSOMELA PECTORALIS
 (BANDED HONEY-EATER)
SUGOMEL NIGER
 (BLACK HONEY-EATER)

Order PASSERIFORMES.

Family MELITHREPTIDÆ.

No. 644.

CISSOMELA PECTORALIS.

BANDED HONEY-EATER.

(PLATE 516.)

MYZOMELA PECTORALIS Gould, Proc. Zool. Soc. (Lond.), 1840, p. 170, July 1841: North-west Australia.

Myzomela pectoralis Gould, Proc. Zool. Soc. (Lond.), 1840, p. 170, 1841; *id.*, Birds Austr., pt XII. (Vol. IV., pl. 65), Sept. 1st, 1843; *id.*, Handb. Birds Austr., Vol. I., p. 557, 1865; Ramsay, Proc. Zool. Soc. (Lond.), 1875, p. 597; *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 190, 1878; Forbes, Proc. Zool. Soc. (Lond.), 1879, p. 275; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 138, 1884; Ramsay, Proc. Linn. Soc. N.S.W., Ser. 2, Vol. I., p. 169, 1887; *id.*, Tab. List Austr. Birds, p. 14, 1888; Hall, Key Birds Austr., p. 37, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 355, 1901; Hall, Emu, Vol. I., p. 97, 1902 (N.W.A.); Le Souëf, *ib.*, Vol. II., p. 91, 1902 (N.T.); North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 100, 1906; Mathews, Handl. Birds Austral., p. 93, 1908; (?) Whitlock, Emu, Vol. VIII., p. 183, 1909 (W.A.); Mathews, *ib.*, Vol. IX., p. 13, 1909 (N.W.A.); Hill, *ib.*, Vol. X., p. 284, 1911 (N.W.A.); *id.*, *ib.*, Vol. XII., p. 259, 1913 (N.T.); Macgillivray, *ib.*, Vol. XIII., p. 176, 1914 (N.Q.); Barnard, *ib.*, Vol. XIV., p. 48, 1914 (N.T.); H. L. White, *ib.*, Vol. XVI., p. 227, 1917 (N.T.); Campbell and Barnard, *ib.*, Vol. XVII., p. 32, 1917 (N.Q.); Macgillivray, *ib.*, p. 205, 1918 (N.Q.).

Cissomela nigra (not of Gould) Bonaparte, Comptes Rendus Acad. Sci. Paris Vol. XXXVIII., p. 265, 1854.

Myzomela pectoralis pectoralis Mathews, Nov. Zool., Vol. XVIII., p. 396, 1912.

Myzomela pectoralis incerta Mathews, *ib.*, Jan. 31st, 1912: Cape York, Queensland.

Cissomela pectoralis pectoralis Mathews, List Birds Austr., p. 264, 1913.

Cissomela pectoralis incerta Mathews, *ib.*

DISTRIBUTION. North-west Australia, Northern Territory, North Queensland.

Adult male. General colour of the upper-surface black including the top of the head, lores, nape, hind-neck, back, scapulars, wings, tail, and a band across the upper breast; lower back inclining to grey; upper tail-coverts white; tips of tail-feathers rust-brown; chin, throat, fore-neck, sides of face, sides of neck, under tail-coverts, axillaries and under wing-coverts white; abdomen and sides of body cream-white; thighs blackish intermixed with white; outer margin of wing below, under-surface of flight-quills, and lower aspect of tail black. Bill and feet black.

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eyes dark umber. Total length 120 mm. ; culmen 15, wing 70, tail 45, tarsus 18. Figured. Collected at Napier Broome Bay, North-west Australia, on the 28th of December, 1909.

Adult female. Crown of head, fore-head, lores and nape black ; a white collar on the hind-neck ; back and scapulars cinnamon with dark centres to the feathers ; rump inclining to grey with dark shaft-lines ; upper tail-coverts white ; wings black, becoming dark brown on the apical portion of the outer primary-quills and fringed with white at the tips of the secondaries ; tail black margined with white at the tips of the middle feathers ; chin, throat and sides of neck white ; a band of black across the upper breast ; lower breast, abdomen, sides of body, vent, under tail-coverts, axillaries and under wing-coverts white ; outer edge of wing below black ; under-surface of flight-quills and lower aspect of tail blackish-brown ; eyes brown ; feet slate ; bill black. Total length 105 mm. ; culmen 12, wing 63, tail 41, tarsus 16. Figured. Collected at Cape York, North Queensland, on the 23rd of July, 1898.

Adult male. Top of head including the fore-head, lores, sides of crown to the level of the eye, and hind-neck black ; mantle, back, and scapulars cinnamon with black subapical streaks to the feathers ; rump inclining to grey sparsely marked with dark streaks ; upper tail-coverts white ; upper-surface of wing black inclining to smoke-brown towards the tips of some of the flight-quills, some of the innermost secondaries margined with white ; tail black, narrowly fringed with white on the middle feathers ; chin, throat, fore-neck, sides of neck, and sides of face white with hair-like tips to the feathers on the chin ; a band of black across the breast ; abdomen, sides of body, thighs, and under tail-coverts white, inclining to grey on the flanks ; axillaries and under wing-coverts white ; under-surface of flight-quills and lower aspect of tail blackish. Total length 107 mm. ; culmen 13, wing 63, tail 40, tarsus 16. Collected at Cape York, and is the type of *M. p. incerta*.

Immature male. Crown of head and nape rust-brown, many of the feathers tipped with black ; lores and eye-ring blackish ; mantle, back, and scapulars chestnut with minute shaft-lines ; rump grey slightly tinged with chestnut and the dark shaft-lines almost obsolete ; upper tail-coverts greyish-white ; the wings, which are in moult are black, but those feathers that have not yet moulted are rust-brown ; middle tail-feathers black narrowly edged with white, the lateral ones hair-brown ; throat, sides of face, and sides of neck cream-white ; a blackish band across the breast ; breast, abdomen, and under tail-coverts cream-white ; sides of body and under wing-coverts buffy-white ; under-surface of flight-quills dark hair-brown ; lower aspect of tail similar but rather darker. Collected at Derby, North-west Australia, on the 18th of October, 1886.

Immature male. Top of head, fore-head, and nape dark cinnamon-brown ; lores and a line behind the eye black ; back and scapulars chestnut, intermixed with grey on the rump ; upper tail-coverts greyish-white ; upper wing-coverts dark brown fringed with chestnut ; flight-quills blackish-brown margined with chestnut on the outer webs ; tail blackish with pale edges to the feathers and dark obsolete cross-bars ; sides of face lemon-yellow with a dark spot on the lower portion of the ear-coverts ; chin, throat, and sides of neck whitish ; a rust-brown band across the breast ; abdomen, sides of body, and under tail-coverts glossy cream-white ; axillaries and under wing-coverts white ; under-surface of flight-quills dark brown ; lower aspect of tail blackish. Collected at Derby, North-west Australia, on the 24th of May, 1900.

Immature male. Top of head, sides of crown, nape, and hind-neck uniform rust-brown ; mantle, back, scapulars, and rump pale chestnut with grey bases to the feathers ;

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upper tail-coverts buffy-white; upper wing-coverts and flight-quills dark brown with rufous margins to the feathers; tail-feathers also dark brown with pale edgings; lores and feathers round the eye blackish; cheeks and ear-coverts lemon-yellow with a dark blotch behind the latter; chin and throat whitish tinged with lemon-yellow, the feathers on the chin have hair-like tips; a narrow band of dull chestnut across the fore-neck; breast similar to the throat; abdomen, sides of body, and under tail-coverts silky-white; axillaries and under wing-coverts like the breast; under-surface of flight-quills hair-brown; lower aspect of tail similar but somewhat darker. Collected at Derby, North-west Australia, on the 4th of June, 1900.

Immature female. Top of head, sides of head, and nape rust-brown with the appearance of two or three black feathers on the crown and nape; back and scapulars chestnut; rump dusky-grey; upper tail-coverts dull white; upper wing-coverts dark brown with pale edgings; flight-quills also dark brown, inclining to blackish-brown on the inner secondaries, with rusty margins on the outer webs; tail-feathers similar narrowly edged with white; lores and feathers surrounding the eye blackish; ear-coverts pale lemon-yellow; chin, throat, and sides of neck dull white; a narrow irregular dark band across the upper breast; lower breast, abdomen, sides of body, under tail-coverts, axillaries, and under wing-coverts cream-white; under-surface of flight-quills dark hair-brown with pale rufous margins; lower aspect similar to its upper surface. Eyes chestnut; feet slate-grey; bill black. Collected at Skull Creek, Cape York, North Queensland, on the 6th of December, 1912.

Immature male. Top of head, including the fore-head and sides of the crown to the level of the eye, nape, hind-neck, and mantle cinnamon; back pale chestnut inclining to grey, with a tinge of chestnut on the rump; upper tail-coverts whitish; upper wing-coverts dusky-brown fringed with cinnamon, becoming almost uniform on the bastard-wing and primary-coverts; flight-quills blackish-brown edged with rust-colour on the outer webs; tail blackish-brown with pale edgings to the feathers; lores blackish-brown; sides of face lemon-yellow with a dark spot behind the ear-coverts; chin, throat, fore-neck, and side of neck white very slightly tinged with lemon-yellow; a narrow rust-brown band across the breast; abdomen and sides of body silky-white with grey bases to the feathers on the latter; under tail-coverts, axillaries, and under wing-coverts white; under-surface of flight-quills dark brown; under aspect of tail similar but rather darker. Collected at Derby, North-west Australia, on the 4th of June, 1900.

Nest. In a small white-wood bush about 7 feet high. Height from ground 7 feet. The nest was placed in a thin fork near the top of the bush and was built of fine strips of grass and paper-bark. The outside of nest was lightly covered with unravelled cocoons and cobwebs. Is lined with rootlets. Was firmly fastened to the branches with cobwebs and pieces of unravelled cocoons. Dimensions: outside, $2\frac{1}{8}$ by $2\frac{1}{8}$ by $1\frac{1}{8}$; inside, $1\frac{5}{8}$ by $1\frac{1}{8}$ by 1 in. deep (Derby).

Eggs. Two eggs is the usual number laid for a clutch. A pair taken at Borroloola, Macarthur River, Northern Territory, on the 6th of January, 1914, is of a buffy-white ground-colour, and becoming darker towards the larger end of each egg, where a band of very minute and cloudy-brownish markings form an indistinct zone. Ovals in shape, and rather sharply pointed at the smaller ends; surface of shell smoothly granular, and without gloss. 15 mm. by 11.

Nest. A small open cup-shaped structure, usually suspended between forks at the extremity of a small leafy branch of a tree or bush. Composed of strips of bark and fine grasses, bound together with cobwebs. Lined with fine rootlets and grass. Dimensions over all: 2 inches across by $1\frac{1}{2}$ inches deep. The egg cavity is $1\frac{1}{2}$ inches across, by about 1 inch in depth.

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Eggs. A clutch of two eggs taken at Coen, Cape York Peninsula, North Queensland, on the 9th of December, 1921, is swollen oval in shape, and measure 14-16 mm. by 12.

Breeding-months. October to January and on to May (June).

GOULD wrote: "The present interesting bird was forwarded to me by Bynoe as having been shot by him on the north coast, but to my regret it was unaccompanied by any information whatever respecting its habits."

Ramsay a little later recorded from Roekingham Bay, North Queensland: "One specimen only obtained, which I believe to be the young of this species; should it prove otherwise, it will be hereafter described," and from reporting upon Boyer-Bower's collection from Derby, North-west Australia, observed: "This species is, during some seasons, plentiful in the neighbourhood of Cairns and Cardwell, where I found it breeding in 1873-74. Specimens from Cape York and Derby do not differ from those found further south. The young differ materially in plumage from the adults."

Hall recorded Rogers' notes from Derby, after detailing plumage changes from nestling to adult: "There is here a eucalypt of low scrubby growth that is honeyladen in the six weeks of its flowering season. It is remarkable for the amount of sweets within the blooms. While this species of bird is feasting continuously among the higher branches, the aborigines below are as continuously sucking the flowers for the honey within. This bird sings well."

Hill wrote from Kimberley, North-west Australia: "The first arrivals appeared at Napier Broome Bay on 26/12/09, when the first crop of *Grevillea* flowers opened, and their numbers increased largely during the next few weeks. As the flowers failed their numbers decreased, until none remained in the first week of February. However, they returned in the middle of March, when the second crop of flowers opened. The majority went away again as the food supply decreased, but a few pairs remained until the end of July, when my observations ceased. Two nests only were found, the first of which contained two fresh eggs (10/5/10) and the second two young (20/7/10). The early arrivals were accompanied by many birds of immature plumage, so that I presume the two nests found in May and July were late broods. The food appears to consist entirely of honey."

Maegillivray has written: "First met with on the Leichhardt River, 25 miles beyond Caloola Station, where a number were feeding on a patch of bloodwood. Stomach contents, honey, insects, and portions of bloodwood flowers. They were also noted at Cape York, on the Jardine River, and near Paira. In the latter locality they were feeding on the blossoms of the black tea-tree. Stomach contents, honey and portions of flowers. . . ." "On the Archer River Mr. McLennan noted Banded Honey-eaters as numerous in the

BANDED HONEY-EATER.

blossoming trees. On the 25th July he flushed one from its nest 18 inches from the ground in a small bush ; it contained two eggs."

Campbell and Barnard record from the Cardwell district: "This truly northern bird was noted on the table land. It evidently extends right across to the Northern Territory as it is a common bird on the Macarthur River, where it was found breeding in the latter end of 1913."

In my "Reference List" in 1912 I named

Myzomela pectoralis pectoralis Gould.

North-west Australia ; Northern Territory.

Myzomela pectoralis incerta Gould.

"Differs from *M. p. pectoralis* in its smaller size ; wing 63 mm., typical wing 66-74 mm. Cape York."

North Queensland.

With transference only to the genus *Cissomela* I retained this arrangement in my 1913 "List."

GENUS—SUGOMEL.

SUGOMEL Mathews, Austral Av. Rec., Vol. 5,
pt. I., p. 7, July 17th, 1922. Type (by
original designation) *Myzomela nigra ashbyi* Mathews.

THIS form, confused under *Myzomela* through the bane of genus-lumping, appears to have no close relationship with that group.

The birds are small Myzomeline-looking birds of black and white coloration, with a long, slender, curved bill, long wing, medium square tail and slender legs and feet.

The bill is longer, more curved and more slender than in *Myzomela*, longer than the head, the nasal groove and nostrils very long but still less than one-third the length of the bill on account of the anterior lengthening. The wing is entirely different; the first primary is very minute, so reduced as to be entirely hidden by the coverts and apparently missing; the second primary, superficially the first, is very long, almost the same length as the third and fourth, which are subequal and longest, and longer than the fifth; the third, fourth and fifth primaries are scalloped on the outer edges towards the tips. The tail is longer than in the preceding genera and square.

The feet are slender, but the tarsus is much shorter than the bill, the anterior face scutellate, the hinder bilaminate; the toes short and delicate, the outer and inner subequal, the latter is little shorter and with its claw about equal to the middle toe alone; the hind-toe and claw are stouter and a little longer than the middle toe and claw; claws slender.

I do not at present know where this genus should be located in the Sun-Bird Honey-eater series.

Order PASSERIFORMES.

No. 645.

Family MELITHREPTIDÆ.

SUGOMEL NIGER.

BLACK HONEY-EATER.

(PLATE 516.)

MYZOMELA NIGRA Gould, Birds Austr. and Adj. Isl., pt. II., pl. 8, Feb. 1838: Interior of New South Wales.

Myzomela nigra Gould, Birds Austr. and Adj. Isl., pt. II., pl. (8), 1838; *id.*, Birds Austr., pt. IV. (Vol. IV., pl. 66), Sept. 1st, 1841; *id.*, Handb. Birds Austr., Vol. I., p. 558, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 190, 1878; Forbes, Proc. Zool. Soc. (Lond.), 1879, p. 275; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 138, 1884; Ramsay, Tab. List Austr. Birds, p. 14, 1888; Hall, Key Birds Austr., p. 37, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 354, 1901; Hall, Emu, Vol. I., p. 98, 1902 (N.W.A.); Carter, *ib.*, Vol. III., p. 91, 1903 (M.W.A.); Lawson, *ib.*, Vol. IV., p. 135, 1905 (W.A.); North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 97, 1906; Mathews, Handl. Birds Austral., p. 93, 1908; Gibson, Emu, Vol. IX., p. 74, 1909 (S.W.A.); Whitlock, *ib.*, p. 210, 1910 (W.A.); Macgillivray, *ib.*, Vol. X., pp. 34-93, 1910 (N.S.W.); *id.*, *ib.*, Vol. XIII., p. 176, 1914 (N.Q.); Alexander, *ib.*, Vol. XVI., p. 41, 1916 (S.W.A.); Ashby, *ib.*, Vol. XVII., p. 220, 1918 (W.A.); Campbell, *ib.*, Vol. XVIII., p. 5, 1918.

Myzomela nigra nigra Mathews, Nov. Zool., Vol. XVIII., p. 396, Jan. 31st, 1912.

Myzomela nigra westralensis Mathews, *ib.*, (Day Dawn) West Australia.

Myzomela nigra ashbyi Mathews, Austral Avian Record, Vol. I., pt. 4, p. 98, Sept. 18th, 1912: Mount Barker, South Australia.

Cissomela nigra nigra Mathews, List Birds Austr., p. 264, 1913.

Cissomela nigra ashbyi Mathews, *ib.*; S. A. White, Emu, Vol. XVIII., p. 24, 1918.

DISTRIBUTION. Extra-tropical Australia north-west to Derby; apparently an interior bird, not coastal.

Adult male. Entire upper-surface including the top of the head, back, wings and tail black, somewhat paler on the flight-quills; sides of face, throat, fore-neck and middle of breast black like the crown of the head; sides of breast, abdomen and under tail-coverts white; thighs, axillaries and under wing-coverts black; under-surface of flight-quills and lower aspect of tail blackish-brown. Eyes dark brown, bill and legs black. Total length 120 mm.; culmen 16, wing 68, tail 40, tarsus 14. Figured. Collected at Day Dawn, West Australia, on the 25th of July, 1903, and is the type of *M. n. westralensis*.

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Adult female. General colour of the upper-surface dusky earth-brown including the top of the head, sides of face, sides of neck, hind-neck, back, scapulars, rump and upper tail-coverts; wings and tail darker than the back with pale margins to the feathers; lores and a spot below and behind the eye coffee-brown; chin and throat buffy-white with dark centres to most of the feathers, the buff increasing on the upper breast; abdomen, sides of body, thighs, vent and under tail-coverts whitish; axillaries and under wing-coverts dusky-brown; under-surface of flight-quills hair-brown, slightly paler on the margins; lower aspect of tail similar. Eyes hazel, bill and legs black. Total length 105 mm.; culmen 13, wing 64, tail 39, tarsus 14. Figured. Collected at Point Cluets, Mid-west Australia, on the 6th of June, 1901.

Immature. General colour of the upper-surface dark brown with a smoky tinge, with pale margins to many of the feathers—particularly on those of the wings and tail; lores, sides of face, sides of neck, chin, and throat smoke-brown with whitish margins to some of the feathers which are more pronounced on the breast; abdomen and under tail-coverts white; under wing-coverts and quill-lining pale hair-brown with pale margins to the latter; lower aspect of tail similar to its upper-surface. Eyes deep brown, feet and legs black, bill black, gape yellow. Collected in East Murchison, Mid-west Australia, on the 8th of September, 1909.

Female, immature. General colour of the upper-parts hair-brown with pale margins to the feathers, including the back, wings, and tail; crown of head and sides of face inclining to rust-brown; chin and throat buffy-white with dark bases to the feathers, becoming darker on the fore-neck; breast, abdomen, sides of body, and under tail-coverts buffy-white; under wing-coverts dusky-brown; under-surface of flight-quills pale hair-brown with paler margins; lower aspect of tail also pale hair-brown. Collected at Derby, North-west Australia, on the 25th of March, 1900.

Nestling. General colour of the upper-surface blackish-brown with pale edgings to many of the feathers, including the top of the head, back, wings, and tail; chin, throat, and breast dusky-brown with whitish margins to the feathers; breast, abdomen, and sides of the body buffy-white; under-surface of flight-quills dark hair-brown; lower aspect of tail similar. Eyes nearly black, bill dark horn, gape yellow, legs and feet grey-brown. Collected in East Murchison, Mid-west Australia, in September 1909.

Eggs. Two eggs usually form the clutch. A pair taken at Wiluna, East Murchison, Western Australia, on the 16th of August, 1909, is of a yellowish-buff ground-colour, zoned at the larger end with an indistinct band of minute spots of dull and cloudy markings of pale slate and umber. The eggs closely resemble, in miniature, some types of those of the Black and White Fantail (*Rhipidura tricolor*). Ovals in shape; surface of shell smooth, and slightly glossy. 15-16 mm. by 12.

Nest. Is a small open and rather shallow structure, somewhat loosely put together, and composed of small dead twigs and pieces of dry grass, etc., and matted together with cobwebs, and placed in the fork of a small horizontal limb, and very much after the manner of the nest of the *Lalage tricolor*, only of course much smaller. Lined with fine grasses, and a soft brownish vegetable matter. Usually placed in a bush (often dead and without foliage) and sometimes within 6 feet of the ground. Dimensions over all; 2 inches by nearly $1\frac{1}{2}$ inches deep; and the egg cavity $1\frac{1}{2}$ inches across, by $\frac{3}{4}$ of an inch in depth.

Eggs. Two eggs taken at Cobbora, New South Wales, on the 28th of October, 1917. Measure as follows: 14-15 mm. by 11.

Breeding-months. September to end December.

BLACK HONEY-EATER.

THIS is one of the birds that Gould figured in the two parts of the *Birds of Australia* which he published before he went to Australia, and which he desired to be cancelled when he re-commenced his work on his return.

Gould's field-notes read: "This most active little bird is peculiar to the interior of Australia, over which it has an extensive range. Gilbert found it at Swan River, and I met with it on the plains near the Namoi; here it was always on the Myalls (*Acacia pendula*), while in Western Australia it generally evinced a preference for the sapling gums. Although it has the feathered tongue and sometimes partakes of the sweets of the flowers, it feeds almost exclusively on insects, which it procures both on the blossoms and among the thickly foliated branches. The male frequently pours forth a feeble plaintive note, perched upon some elevated dead branch, where he sits with his neck stretched out and without any apparent motion except the swelling of the throat and the movement of the bill. The flight of this bird is remarkably quick, and performed with sudden zigzag starts. The female differs remarkably from the male in the colouring of the plumage, and as is the case with many other birds, is much more difficult to detect than the male, which is always more animated, and frequently betrays its presence by his song."

Mr. Thos. P. Austin has written me (in 1917) from Cobbora, New South Wales: "The first time I saw this species was when the country was suffering from a very severe drought about three years ago, and then only about half a dozen birds, but this year during September and October a fair number of them put in an appearance, but they are only to be found in heavy forest country through which a very big bush fire passed the summer before last, killing all the smaller trees and saplings. These are now all shooting up again thickly with suckers from the roots. The birds are rather shy and many of them would escape notice only for their plaintive single note, which somewhat resembles that of *Megalurus gramineus*, only is much more feeble. During the last three weeks (Oct.-Nov.) I have seen about a dozen of their nests all containing two eggs. No nest was placed more than three feet from the ground, but most of them were only about fifteen inches."

Mr. J. W. Mellor has written: "These birds are generally found in the more northern parts of Australia, but at times during dry periods they have come down as far south as the Adelaide Plains, or, more correctly speaking, to the hills that border these plains, as I have seen them in the Mount Lofty Ranges, at Black Hill, only eight or ten miles from Adelaide, and also at Tea-tree Gully. This was some years ago, during an exceedingly dry spell of years, so I take it that these birds were forced down by circumstances, by the dried and parched conditions of the North. I noted that the birds, unlike the Blood

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Bird, kept more to the lower scrub trees and would alight in the dwarf she-oaks (*Casuarina*), and ever and anon they would dart into the air as if after some small insect, and then return to perch on a bush and repeat the performance; they would at times fly into the air and keep mounting up in jerky little flights until they attained a considerable height, then dart downwards in a diagonal slope to another locality. The birds, although feeding on honey to a large extent, eat insect life in the form of gnats and small flies which I have seen them catch while on the wing."

Mr. Edwin Ashby wrote: "In 1888 these birds were nesting in numbers in some scrubby ground near Mount Barker, South Australia. I watched a number of birds feeding their young. I did not see the birds again till 1898, when again they were numerous along the foot hills of the Mount Lofty Ranges. I know of several nests that were taken. A few years later they came down again into our neighbourhood. It seems that its occurrence in our district is dependent on the dryness or otherwise of the interior." He also sent me a cutting describing the antics of some pairs mimicking accidental hurt: "As I put out my hand to touch the nest the little brown hen flew to the ground and pretended to have a broken wing, which hung down helplessly at the side; but the black and white cock quite outdid the hen, for he flew at once to the assistance of the hen in her efforts to draw me off; he pretended to have a broken leg, and imitated perfectly the sad plight of a bird suffering from this disablement. The dead bush he flew to had a number of twigs, the top one he tried to settle on, clutching it with one leg, but slipped from that to the next one 6 ins. below, and so on, falling from twig to twig, clutching at each in turn but being unable to keep its hold, finally tumbling helplessly on to the ground. As soon as I had taken the eggs and nest, his leg had recovered, and both parents flitted about me uttering mournful but low whistles until I was out of hearing."

Mr. Tom Carter has written me: "In your 'Reference List' 1912 you simply give the Western Black Honey-eater as occurring generally through West Australia. It certainly does not occur in the heavily timbered extreme south-west areas, according to my observations. Gould states that Gilbert found it breeding on the Swan River, but the exact locality is not stated, and it might be from fifty to eighty miles inland, as the aboriginal name is given for the 'mountain districts of Western Australia.' The only district in which this species was observed by me was about Point Cloates, where in some seasons they were not uncommon, but several years might pass without any being seen. The following extracts are from my journal: 'March 15, 1898. Several seen about Point Cloates, half mile from beach. May 23, 1902. Not uncommon at foot of ranges at Point Cloates. June 27, 1901. One

BLACK HONEY-EATER.

seen. August 20, 1913. A good many on scrubby red sandhills 15 miles east of Maud's Landing (40 miles S.E. from Point Cloates).''

Rogers' note from Derby, as given by Hall, reads: "It is strange no record (1900) has hitherto been made of the finding of this species in the north-west, because it appears to be very common. The Black Honey-cater perches on the top of a blooming eucalypt, and judging by its motions one would take it to be a Fly-catcher fluttering after small native bees which are being attracted by the honey-laden flowers. On opening the stomachs of several I found them crammed with bees, while from each of others a spoonful of honey fell from the bird when it was held downwards by the feet."

Whitlock wrote from the East Murchison: "Found in scattered pairs throughout the district, but showing a preference for stony hill sides. I found several nests, and secured perfect clutches of eggs, also a pair of nestlings. The female does all the work of nest building. The male perches near at hand on some conspicuous twig, where he utters his monotonous call, with an occasional erratic flight around. When the female arrives with building material he flutters down to the half-finished nest—I suppose to show his appreciation."

Macgillivray, from the Barrier Range district, wrote: "The Black Honey-eaters were either feeding on the mistletoe or occupied with nesting cares. When a turpentine bush dies, usually from being ring-barked by rabbits in the drought, the dead branches arch over till the tips touch the ground. It is here that the Black Honey-eater usually places its little nest in the convexity of the arch, where there is a sufficient fork to fix it to."

Ashby, recording notes on birds met with near Pungonda in South Australia, wrote: "Black Honey-eaters were not uncommon. One's attention was usually called to them by hearing their warning call—a low but strangely penetrating whistle; at a little distance this whistle so closely resembles the call of the Scrub Robin that at first I thought I was listening to that species. One nest with eggs was found placed in a fork of dead mallee about 3 feet from the ground."

The technical history is a little confused. Gould described the species from the Interior of New South Wales before he went to Australia, and when I prepared my "Reference List" I accepted that as correct and separated two subspecies, naming thus:

Myzomela nigra nigra Gould.

Queensland, New South Wales, Victoria,
South Australia.

Myzomela nigra westraliensis Mathews.

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"Differs from *M. n. nigra* in its smaller size (wing 68 mm.) and darker coloration, especially noticeable on the primaries. (Day Dawn) West Australia."

West Australia.

When Witmer Stone examined the reputed type specimens of Gould's Australian birds in Philadelphia he reported that a male from West Australia was marked "type." I accepted this, and therefore named

Myzomela nigra ashbyi.

"Differs from *M. n. nigra* (from West Australia) in its larger size and lighter upper coloration. Mount Barker, South Australia."

South Australia to Queensland.

The recent information that Gould presented many of his earlier types to the British Museum involves this case, and there can be no doubt whatever that the type did come from the Interior of New South Wales, and that the specimen in Philadelphia from West Australia is not the type. This means reversion to my earlier subspecific names. Unfortunately the generic name is also under review. Bonaparte introduced a new genus *Cissomela* with Gould's *nigra* for type, but fortunately he described his specimen, which shows it to be Gould's *pectoralis* and not *nigra*. When I split up *Myzomela* in my 1913 "List" I used *Cissomela* for the black and white *Myzomela* and classed *niger* with *pectoralis* in *Cissomela*. Here the fatuity of genus-lumping is well exposed, as this species proves to have little or no connection with the other species classed under *Myzomela*, whether they be closely related or not, as the wing is of quite a different formation. I have therefore introduced a new genus for this form, but do not yet know its exact location.

The names and forms will now be

Sugomel niger niger (Gould).

Interior New South Wales, Queensland,
South Australia and Victoria.

At present I cite *Myzomela nigra ashbyi* Mathews as a synonym, but it may later need reinstatement.

Sugomel niger westraliensis Mathews.

West Australia.

Here also more than one subspecies may be confused.

GENUS—MELOMYZA.

MELOMYZA Mathews, Austral Av. Rec., Vol. I,
pt. 8, p. 196, March 20th, 1913. Type (by
original designation) *Myzomela obscura* Gould.

As differentiating this genus I simply wrote: "Differs from *Cissomela* in having the second primary much shorter than the third."

Small "Honey-eaters" with long curved bill, long wings, long straight tail, and short legs with very weak feet.

The bill is strongly curved, longer than the head, the edges of the mandibles towards the tips finely serrated; nasal groove long, about one-fourth the length of the culmen, the nostrils appearing as linear slits, with a thick operculum present, nasal bristles obsolete, and rictal bristles delicate and scarcely noticeable; the culmen keeled posteriorly and compressed, but rounded anteriorly, point sharp; the interramal space long and feathered, but less than one-fourth the length of the mandible, the gonys decurved in agreement with upper.

The wing is long, the third and fourth primaries subequal and longest, the fifth a little less, the second only about equal to the seventh; the first short, less than half the length of the second, but more than one-third the length of the third; secondaries long.

The tail is long and square.

The legs are long and slender, the tarsus in front obscurely scutellate in adults, six scutes clearly seen in the immature stage, bilaminate posteriorly. The toes are short, the hind-toe and claw of stouter build; the claws curved and short; the anterior toes almost entirely separated basally, the middle toe and claw a little shorter than the hind-toe and claw; the outer longer than the inner, and the inner toe and claw scarcely exceeding in length the middle toe alone.

Order PASSERIFORMES.

No. 646.

Family MELITHREPTIDÆ.

MELOMYZA OBSCURA.

DUSKY HONEY-EATER.

(PLATE 517.)

MYZOMELA OBSCURA Gould, Proc. Zool. Soc. (Lond.), 1842, p. 136, Feb. 1843: Port Essington, Northern Territory.

Myzomela obscura Gould, Proc. Zool. Soc. (Lond.), 1842, p. 136, 1843; *id.*, Birds Austr., pt. xvi. (Vol. IV., pl. 67), Dec. 1st, 1845; *id.*, Handb. Birds Austr., Vol. I., p. 559, 1865; Ramsay, Proc. Zool. Soc. (Lond.), 1875, p. 597; *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 190, 1878; Forbes, Proc. Zool. Soc. (Lond.), 1879, p. 263; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 143, 1884; Ramsay, Tab. List Austr. Birds, p. 14, 1888; Hall, Key Birds Austr., p. 37, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 356, 1901; North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 96, 1907; Mathews, Handl. Birds Austral., p. 93, 1908; Broadbent, Emu, Vol. X., p. 239, 1910 (N.Q.); Macgillivray, *ib.*, Vol. XIII., p. 177, 1914 (N.Q.); Barnard, *ib.*, Vol. XIV., p. 48, 1914 (N.T.); H. L. White, *ib.*, Vol. XVI., p. 227, 1917 (N.T.); Campbell and Barnard, *ib.*, Vol. XVII., p. 32, 1917 (N.Q.); Macgillivray, *ib.*, p. 204, 1918 (N.Q.); Campbell, *ib.*, Vol. XVIII., p. 185, 1919 (N.T.); S. A. White, *ib.*, Vol. XIX., p. 225, 1920 (Q.); Campbell, *ib.*, Vol. XX., p. 63, 1920.

Myzomela obscura grisescens Hartert, Nov. Zool., Vol. XII., p. 235, Feb. 11th, 1905: Brock's Creek, Northern Territory.

Myzomela obscura harterti Mathews, Bull. Brit. Ornith. Club, Vol. XXVII., p. 100, May 26th, 1911: Cairns, Queensland; *id.*, Nov. Zool., Vol. XVIII., p. 397, 1912.

Myzomela obscura obscura Mathews, Nov. Zool., Vol. XVIII., p. 397, Jan. 31st, 1912.

Myzomela obscura munna Mathews, *ib.*: Cape York, Queensland.

Myzomela obscura apsleyi Mathews, Austral Avian Record, Vol. I., pt. 2, p. 48, April 2nd, 1912: Melville Island, Northern Territory.

Melomyza obscura obscura Mathews, List Birds Austr., p. 264, 1913.

Melomyza obscura apsleyi Mathews, *ib.*, p. 265; *id.*, Ibis, 1914, p. 127.

Melomyza obscura harterti Mathews, *ib.*; *id.*, South Austr. Orn., Vol. 2, p. 59, 1915.

DISTRIBUTION. Northern Territory and Northern Queensland (New Guinea).

Adult male. General colour of the upper-surface dark smoke-brown with a glossy appearance on the wings and tail; under-surface dark coffee-brown; under-surface of flight-quills glossy dark brown, rather paler on the margins; lower aspect



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MELOMYZA OBSCURA
(DUSKY HONEY-EATER)

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DUSKY HONEY-EATER.

of tail uniform glossy dark brown. Eyes dark brown, bill black, feet and legs grey-blue. Total length 125 mm.; culmen 17, wing 69, tail 53, tarsus 19. Figured. Collected at Cairns, North Queensland, in July, 1908, and is the type of *Myzomela obscura harterti*.

Adult female from the same locality similar to the adult male.

Adult male. General colour both on the upper and under-surface dull dusky-brown, somewhat paler and inclining to buffy-white on the under-surface of the flight-quills. Eyes brown, feet and tarsi leaden-blue, bill black. Total length 143 mm.; culmen 18, wing 72, tail 55, tarsus 19. Figured. Collected on Melville Island, Northern Territory, on the 17th of October, 1911, and is the type of *Myzomela obscura apsleyi*. In some specimens a red tinge shows on the fore-head.

Adult female from the same locality, similar to the adult male.

Adult female. General colour of the upper-surface dusky-brown with greyish edges to the outer webs of the flight-quills, the inner webs of which are blackish with pale margins on the basal portions; tail glossy dark brown; under-surface smoke-brown, becoming paler and inclining to fawn-buff on the lower flanks, thighs, under tail-coverts, axillaries, and under wing-coverts; lower aspect of tail greyish-brown. Eyes brown, feet slate-colour, bill black. Total length 115 mm.; culmen 15, wing 60, tail 45, tarsus 18. Figured. Collected on Skull Creek, Cape York, North Queensland, on the 7th of December, 1912.

Adult male from the same locality similar to the adult female.

Eggs. Two eggs usually form the clutch. A pair taken at Cooktown, North Queensland, on the 23rd of October, 1893, is of a white ground-colour, possessing a very pale tinge of pink, minutely spotted with reddish-brown, chestnut, and purplish-grey, the markings being confined chiefly to the larger end of each egg. Swollen ovals in shape; surface of shell smooth and slightly glossy. 15-16 mm. by 12.

Nest. Small, frail, cup-shaped structure, composed chiefly of rootlets, thin grasses, and sometimes hair. Generally suspended from near the extremity of a long leafy branch of a tree or bush. Dimensions over all: nearly 3 inches across by 2 inches deep. Egg cavity about $1\frac{1}{2}$ inches across by nearly $1\frac{1}{2}$ inches in depth.

Breeding-months. September to December.

GILBERT apparently discovered this species, as Gould wrote: "This species is a native of the northern parts of Australia. At Port Essington, where my specimens were procured, it is only to be met with in quiet, secluded and thickly wooded districts, adjacent to small streams of water; its favourite tree appears to be the *Grevillia*, from the blossoms of which it obtains great quantities of honey and insects. The shy and retiring disposition of this species renders the acquisition of specimens very difficult: 'At no time during my stay,' remarks Gilbert, 'did I succeed in getting sight of more than a solitary individual at a time, and I believe it to be a rare bird in all parts of the Cobourg Peninsula.' This bird differs so much in colour from all the other species, yet discovered that it is readily distinguished from all of them. The sexes present no external marks of distinction except that the female is somewhat smaller than the male."

THE BIRDS OF AUSTRALIA.

Mr. J. P. Rogers wrote me from Melville Island: "Coopers' Camp. Nov. 20, 1911. This bird is found in the mangroves and in the jungle growth along the creeks; very few show any red on the head to date. Dec. 30, 1912. Not many were seen on the north side of the island. Jan. 28, 1912. This species is now sparingly distributed through the forests at Coopers' Camp."

Ramsay in 1875, reporting upon the birds of Rockingham Bay district, stated: "A very common species about Port Maekay and Port Denison, but did not appear to be so numerous about Cardwell; several specimens obtained. I have seen it as far south as the Mary river, where, however, it is very rare."

Macgillivray wrote: "First seen in numbers at Cairns, and later on at Cape York, where they were very plentiful in the mangroves, scrub and forest. These birds vary a good deal in size. One nest was found, on 14th May, 1912, containing two hard set eggs. Stomach contents of birds, honey and small insects." He later added: "Dusky Honey-eaters were common birds in the trees about our camp (on the Claudie River) where they seemed to be constantly searching the twigs and leaves for insects. They are also common along the edge of the scrub. At our top camp they were numerous in the trees along the river, and again at the sandalwood landing there were many of them feeding on the blossoming gums. Together with several other species of honey-loving birds, they were often seen congregated on the flowering heads of the umbrella tree. They vary greatly in size. They were common also on the Arher River."

McLennan notes on the King River Trip read: "Pera Head, 4/7/15. Noted amongst some flowering paper barks. King River. Fairly plentiful about mangroves and in flowering trees near river. Liverpool River Island, 27/1/16. Noted in scrub. Port Bradshaw, 5/2/16. Fairly plentiful about scrub and in forest. Stomach, insect remains and honey."

Campbell and Barnard wrote about the Rockingham Bay district: "This dark-plumaged Honey-eater was always in evidence, and lively. It occasionally visited the gardens of our lodging at Cardwell, and dipped into the bluish bells of a Tecoma-like creeper. The Dusky Honey-eater is amongst the many birds that feign lameness or a broken wing when the vicinity of its young is invaded."

Captain S. A. White has written regarding the birds of Stradbroke Island, Queensland: "A very common bird with a very pleasing note. We met with them all over the island. Mr. A. S. Le Souëf banded me the following: 'These Honey-eaters were the most numerous birds on the island. In one mile north of Amity Point 32 were noted, and in eight miles

DUSKY HONEY-EATER.

(including all classes of country) 51 were heard. Their note at times might easily be mistaken for that of the Reed-Warbler. They were chiefly seen in the acacia scrubs.' "

From the Islands of Torres Straits, Campbell wrote: "Numerous," while giving McLennan's note: "23/1/20. Saw three Dusky Honey-eaters and shot one. Could not find the others. Have been on the lookout for this bird for about three weeks; was beginning to think they had all left the island."

No subspecies were distinguished until Hartert studied a collection of Australian birds made in North-west Australia and the Northern Territory, when he named

Myzomela obscura griseescens.

"This new form differs at a glance from *M. o. obscura* by its greyish, instead of dark brownish, upper- and under-surface. This is most evident on the throat and breast. I have compared a fine series from Cape York, Bowen, Cooktown, and other parts of Queensland, as well as from Port Essington."

Type from Brock's Creek, Northern Territory.

This nomenclatorial lapse is explained by the fact that Hartert thought that Port Essington was in North Queensland. I find, however, that Northern Territory specimens do not agree with Queensland ones, and, as the differences were recognisable, I named the Cairns bird

Myzomela obscura harterti

and *M. o. griseescens* Hartert became a synonym of the typical subspecies.

In my "Reference List" in 1912 I added

Myzomela obscura munna.

"Differs from *M. o. harterti* in its paler coloration above and below. Cape York, North Queensland."

and a little later added:

Myzomela obscura apsleyi.

"Differs from *M. o. obscura* in its darker coloration. Melville Island, Northern Territory."

In 1913 I lumped *M. o. munna* with *M. o. harterti* and transferred the species to the genus *Melomyza*, which I had introduced for this "obscure" *Myzomela*, ranging:

Melomyza obscura obscura. Northern Territory.

Melomyza obscura apsleyi. Melville Island.

Melomyza obscura harterti. North Queensland.

When Campbell and Barnard reported upon the Birds of Cardwell, North Queensland, they wrote: "Mathews's *munna* (which=*harterti*) is too near the type locality of *obscura* for scientific separation."

THE BIRDS OF AUSTRALIA.

They may have been influenced by Dr. Hartert's description, but they should have noticed the difference between typical *obscura* and the Queensland birds. Surely Cardwell cannot be called near Port Essington!!

Reporting upon birds from the King River, Northern Territory, Campbell concluded: "Three ♂♂. Average length 146, wing 71, culmen 19, tarsus 19 mm. Nearly uniform drab or hair-brown colour, above and below. The North-east Coastal (Cairns and Cardwell) birds are darker (clove-brown) above and browner (chestnut) underneath—*harterti* Mathews. In this decision I have modified the view which I held with Mr. Barnard when our *Birds of Rockingham Bay* (above quoted) was published."

Later, Campbell dealing with birds from the islands of Torres Straits wrote: "One ♀. Resembles King River (N.T.) skins, but is much lighter coloured than examples obtained in the heavy country at Cardwell which Mr. Mathews designates as *harterti*." This was, of course, *M. o. munna*.

Probably many subspecies occur in New Guinea and the Aru Islands, but long series have not been collected yet. The birds available are more like typical birds than North Queensland ones, and one name is at present available, *Ptilotis fumata* Bonaparte, *Consp. Gen. Av.*, Vol. I., p. 392, 1850-1851, from New Guinea, ex Müller MS. and coll.=Utanata River, S.W. The races and names I now allow are:

Melomyza obscura obscura (Gould).

Northern Territory.

Melomyza obscura apsleyi (Mathews).

Melville Island, Northern Territory.

Melomyza obscura harterti (Mathews).

Cairns District, North Queensland.

Melomyza obscura munna (Mathews).

Cape York, North Queensland.

Melomyza obscura fumata (Bonaparte).

South-west New Guinea, (?) Aru Islands.

GENUS—ACANTHORHYNCHUS.

ACANTHORHYNCHUS Gould, Synops. Birds

Austr., pt. II., pl. (27), April 1st, 1837.

Type (by subsequent designation) Gray,

1840, List Genera Birds, 1st ed., p. 15 *Certhia tenuirostris* Latham.

Leptoglossus Swainson, Classif. Birds, Vol. II.,

p. 327, July 1st, 1837. Type (by

monotypy) *Leptoglossus cucullatus* Swainson

= *Certhia tenuirostris* Latham.

Not—

Leptoglossus Guérin. Ménéville in Duperry, Voy "Coquille," Zool., Vol. II. (2), p. 174, Nov. 1831.

SMALL "Honey-eaters" (? Sunbirds) with very long slender curved bills, long wings, long square tail, and short legs and small feet. The bill is gently curved, almost twice as long as the head, very slender and anteriorly attenuate while basally there is little expansion; the culmen is scarcely keeled at its base and is rounded towards the delicate top, while the edges of the upper mandible seem to curve inwards and clasp the lower one, which is very slender, with the interramal space ill defined and scarcely feathered, and the whole is decurved in agreement with the upper; the nasal groove is indistinctly separated, about one-sixth the length of the mandible, the operculum strong, the nostrils appearing as a long linear slit; nasal bristles prominent, but rictal bristles short and not very noticeable.

The wing has the first primary short, about half the length of the second, which is about equal to the eighth and longer than the secondaries; the third is longer than the seventh, the fourth, fifth and sixth subequal and longest.

The tail is long and square, even slightly emarginate.

The legs are short and obscurely scutellate in front, six scutes counted in the immature, but the adult appearing almost booted, bilaminate posteriorly. The toes are slender, the hind-toe and claw stouter, the middle toe and claw longest; the outer longer than the inner, and the claw rather long and slender.

When the "Honey-eaters" of the Australasian Region are anatomically studied many of the puzzles will be elucidated, but the name seems bad when it is realised that the "brush tongue" is not for honey-eating, but minute insect catching, honey being a secondary article of food.

THE BIRDS OF AUSTRALIA.

Shufeldt in the *Emu*, Vol. XIII., pp. 1-14, 1913, has given a short account of the osteology of the Red Wattle Bird (*Anthochaera carunculata*) and has stated: "I would remark that the Australian genus of birds named *Acanthorhynchus*, which have been referred to the *Meliphagidæ*, possess skeletal characters which, in the main, agree better with the corresponding ones in *Arachnothera* than with any of the same characters as seen in the short-billed *Meliphagidæ*," and added: "After a careful comparison with additional material the fact is made clearer than ever that this bird at least belongs among the *Nectariniidæ*, the entire structure of its skull and tongue pointing unmistakeably to this conclusion.

Shufeldt had such scanty material that he could not determine the relationships exactly of the few species he had, and I agree that *Acanthorhynchus* is probably *Nectariniid*, but probably many other Honey-eaters such as some forms of *Myzomela* should be transferred with it.

Here is a study that could be profitably undertaken by some of the younger Australian ornithologists, a review of the skulls or breastbones or even legs of a series of "Honey-eaters," young and old, and as many species as possible. Such a contribution would be of great value and very probably many novel items would be at once disclosed.

Key to the Species.

No white eye-brow, throat faintly marked	..	..	<i>A. tenuirostris</i>
White eye-brow, throat distinctly marked	..	..	<i>A. superciliosus</i>

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ACANTHORHYNCHUS TENUIROSTRIS
(SPINEBILL)

ACANTHORHYNCHUS TENUIROSTRIS.

SPINEBILL.

(PLATE 518.)

CERTHIA TENUIROSTRIS Latham, Index Ornith. Suppl., p. xxxvi. (after May 30th), 1801 :
New South Wales=Sydney.

Certhia tenuirostris Latham, Index Ornith. Suppl., p. xxxvi., 1801.

Slender-billed Creeper Latham, Gen. Synops. Birds, Suppl. II., p. 165, pl. cxxix., 1801.

Certhia cucullata Vieillot, Ois. Dorés, Vol. II., pl. 60, p. 121, 1802, ex Shaw's MS. : New
Holland=Sydney.

Certhia suffuscula Bechstein, Kurze Uebersicht Vögel, p. 195 (pref. April 12th, 1810), 1811,
based on Oiseaux Dorés, pl. 56, *Heorotaires*, a young bird: Sydney, New South
Wales.

Melithreptus collaris Vieillot, Nouv. Dict. d'Hist. Nat., Vol. XIV., p. 324, Sept. 13th,
1817 : on same basis as preceding.

Meliphaga tenuirostris Stephens, in Shaw's Gen. Zool., Vol. XIV., p. 264, 1826.

Acanthorhynchus tenuirostris Gould, Synops. Birds Austr., pt. II., 1837 ; *id.*, Birds Austr.,
pt. XI. (Vol. IV., pl. 61), June 1st, 1843 ; *id.*, Handb. Birds Austr., Vol. I., p. 551,
1865 ; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 190, 1878 ; Gadow, Cat. Birds
Brit. Mus., Vol. IX., p. 144, 1884 ; Legge, Papers Proc. Roy. Soc. Tasm., 1886,
p. 240, 1887 ; Ramsay, Tab. List Austr. Birds, p. 13, 1888 ; Hall, Key Birds Austr.,
p. 37, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 358, 1901 ; Littler,
Emu, Vol. II., p. 169, 1903 (Tas.) ; A. G. Campbell, *ib.*, p. 207 (King Island) ; *id.*,
ib., Vol. IV., p. 122, 1905 ; McClymont, *ib.*, p. 176 (Tas.) ; North, Austr. Mus. Spec.
Cat. No. 1, Vol. II., p. 101, 1906 ; Batey, Emu, Vol. VII., p. 8, 1907 (Vic.) ; Hill,
ib., p. 18 (Vic.) ; Mathews, Handl. Birds Austral., p. 93, 1908 ; Chisholm, Emu,
Vol. IX., p. 166, 1910 (Vic.) ; Cleland, *ib.*, p. 224 (Food) ; Littler, Handb. Birds
Tasm., p. 54, 1910 ; Ingle, Emu, Vol. X., p. 124, 1910 (Vic.) ; Broadbent, *ib.*,
Vol. X., p. 239, 1910 (N.Q.) ; Cleland, *ib.*, Vol. XI., p. 90, 1911 (Food) ; Fletcher,
ib., p. 107 (Tas.) ; S. A. White, *ib.*, Vol. XIV., p. 143, 1915 (Vic.) ; Purnell,
ib., Vol. XV., p. 43, 1915 (Vic.) ; Mattingley, *ib.*, Vol. XVIII., p. 209, 1919 (Vic.) ;
S. A. White, *ib.*, Vol. XIX., p. 220, 1920 (Q.) ; Cleland, *ib.*, p. 248 (Economics) ;
Le Souëf and Macpherson, *ib.*, Vol. XX., p. 90, 1920 (N.S.W.).

Acnathorhynchus dubius Gould, Synops. Birds Austr., pt. II., pl. 27, April 1st, 1837 : Van
Diemen's Land ; *id.*, Proc. Zool. Soc. (Lond.), 1837, p. 25 ; *id.*, Introd. Birds Austr.,

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- 8vo. ed., p. 65, 1848 ; Ramsay, Tab. List Austr. Birds, p. 13, 1888 ; A. G. Campbell, Emu, Vol. IV., pp. 116-122, 1905 ; North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 104, 1906 ; Mathews, Handl. Birds Austral., p. 93, 1908 ; Mellor and White, Emu, Vol. XII., p. 163, 1913 ; Dove, *ib.*, Vol. XV., p. 235, 1916.
- Leptoglossus cucullatus* Swainson, Classif. Birds, Vol. II., p. 327, July 1st, 1837 : New South Wales, probably same basis as Latham's *C. tenuirostris*.
- Acanthorhynchus halmaturina* A. G. Campbell, Emu, Vol. V., pt. 3, pp. 140-2, Jan. 1st, 1906 : Kangaroo Island ; Hall, Key Birds Austr., 2nd ed., p. 112, 1906 ; White, Emu, Vol. XII., p. 263, 1913.
- Acanthorhynchus halmaturinus* Mathews, Handl. Birds Austral., p. 93, 1908.
- Acanthorhynchus tenuirostris tenuirostris* Mathews, Nov. Zool., Vol. XVIII., p. 397, 1912 ; *id.*, List Birds Austr., p. 265, 1913.
- Acanthorhynchus tenuirostris cairnsensis* Mathews, Nov. Zool., Vol. XVIII., p. 397, Jan. 31st, 1912 : Cairns, North Queensland ; *id.*, List Birds Austr., p. 265, 1913.
- Acanthorhynchus tenuirostris victoriæ* Mathews, Nov. Zool., Vol. XVIII., p. 398, Jan. 31st, 1912, (Olinda) Victoria ; *id.*, List Birds Austr., p. 265, 1913 ; Belcher, Birds Geelong, p. 331, 1914.
- Acanthorhynchus tenuirostris loftyi* Mathews, Nov. Zool., Vol. XVIII., p. 398, Jan. 31st, 1912 : Mount Lofty, South Australia ; *id.*, List Birds Austr., p. 266, 1913.
- Acanthorhynchus tenuirostris halmaturinus* Mathews, Nov. Zool., Vol. XVIII., p. 398, 1912 ; *id.*, List Birds Austr., p. 266, 1913.
- Acanthorhynchus tenuirostris dubius* Mathews, Nov. Zool., Vol. XVIII., p. 398, 1912 ; *id.*, List Birds Austr., p. 265, 1913.
- Acanthorhynchus cairnsensis* Campbell and Barnard, Emu, Vol. XVII., p. 32, 1917 (N.Q.).
- DISTRIBUTION. Eastern Australia from Cairns, North Queensland, to South Australia ; Tasmania ; Kangaroo Island.

Adult male. Top of head, lores and sides of face glossy black ; hind-neck, mantle, sides of neck, and middle of throat dull chestnut ; back, rump, upper tail-coverts, scapulars and general aspect of wings dark slate-grey ; bastard-wing and inner webs of flight-quills blackish with whitish margins to some of the latter ; tail blackish, the two outermost feathers on each side white on the greater part of the terminal portion ; chin, cheeks and fore-neck cream-white ; sides of fore-neck, sides of breast and a band across the breast black ; lower breast, abdomen, sides of body, thighs, and under tail-coverts pale chestnut ; axillaries, under wing-coverts, and inner-margins of flight-quills below buffy-white, remainder of quill-lining dark brown ; lower aspect of tail similar to its upper-surface. Bill black, feet slate, eyes scarlet. Total length 163 mm. ; culmen 26, wing 71, tail 63, tarsus 20. Figured. Collected at Olinda, Victoria, on the 13th of May, 1911, and is the type of *A. t. victoriæ*.

Adult female very similar to the adult male, but the feathers on the head not so glossy ; in some cases the sexes are very much alike.

Adult. Entire top of head and nape glossy black ; lores, sides of crown, a zigzag line down the sides of the neck, and side of breast dull black ; hind-neck and mantle dark rust-brown ; back, rump, and upper tail-coverts dark slate-grey like the upper

SPINEBILL.

wing-coverts and inner secondaries; bastard-wing, primary-coverts, and flight-quills blackish-brown, whitish on the inner margins of the last; tail also blackish with white inner-webs to the two lateral feathers on each side of the terminal portion; cheeks whitish; throat pale smoke-brown; fore-neck buffy-white; breast, abdomen, sides of body, under tail-coverts, and axillaries bright fawn-colour; under wing-coverts and inner margins of flight-quills below white; remainder of quill-lining glossy brown; lower aspect of tail similar to its upper-surface. Bill and feet black, eyes red. Total length 143 mm.; culmen 25, wing 69, tail 58, tarsus 19. Figured. Collected on the Barron River, Cairns, North Queensland, on the 23rd of June, 1910, and is the type of *A. t. cairnsensis*.

Nestlings. "Just prior to leaving the nest have the upper-parts including the crown of the head dull grey washed with olive; all the under-parts dull fawn-colour. Culmen fleshy-brown, lower mandible and cutting edge of upper mandible rich yellow; legs fleshy-grey, feet grey." (North.)

Adult male. Head glossy black; hind-neck and mantle chestnut, which colour is suffused with grey on the upper back; wing-coverts, inner secondaries, lower back, and upper tail-coverts slate-grey; bastard-wing, primary-coverts, and quills dark brown or blackish; outer edge of quills more or less fringed with slate-grey; middle tail-feathers uniform blackish, the two outer feathers on each side white for the terminal third and fringed with brown on the outer-web; lores, ear-coverts, and sides of chest dull black; chin, cheeks, and middle of chest white enclosing a patch of chestnut-brown on the throat; breast, abdomen, sides of body, and under tail-coverts chestnut; under wing-coverts white; axillaries tinged with buff. Total length 137 mm.; culmen 25, wing 68, tail 62, tarsus 19. Collected at Launceston, Tasmania, and is *A. t. dubius* Gould.

Eggs. Two to three eggs form the clutch. A clutch of two eggs taken at Bostobric, near Dorrigo, New South Wales, on the 19th of October, 1898, is of a beautiful pale buff ground-colour, and marked, chiefly at the larger end of each egg, with small spots of chestnut and dull purplish-grey. Rounded ovals in shape; surface of shell smooth and rather glossy. 17 by 14 mm. Tasmanian eggs measure 18 by 12-13.

Nest. A rather deep open cup-shaped structure, composed of bark, grasses and moss; and warmly lined with fine grass and numerous feathers. It is placed in a great variety of situations, and most frequently in a thick bush within 8 or 10 feet from the ground. Dimensions over all are $3\frac{1}{2}$ to nearly 4 inches across, by 2 to $2\frac{1}{2}$ inches deep. The egg cavity $1\frac{3}{4}$ to 2 inches across by $1\frac{1}{2}$ to $1\frac{3}{4}$ inches deep.

Breeding-months. August to December.

THIS beautiful little species so attracted Latham among the Lambert drawings that he had the painting reproduced in his "Supplement" and thus the species was accurately fixed at its first introduction. No notes of habits were given and none were supplied by Vigors and Horsfield, so that those few recorded by Gould constitute the first contribution as follows: "There is no member of the large family of Honey-eaters to which it belongs that enjoys a structure more especially adapted for the purposes of its existence than the present species, whose fine and extremely delicate bill is peculiarly suited for the extraction of insects and honey from the inmost recesses of the tubular flowers which abound in many parts of Australia, particularly

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of the various species of *Epacris*, a tribe of plants closely allied to the Heaths (*Euca*) of Africa and Europe, which when in bloom are always frequented by numbers of these birds; so much so, indeed, that it would seem as if the one was expressly designed for the other. Those who have traversed the immense beds of *Epacris impressa*, so abundantly dispersed over Tasmania, must have often observed the bird darting out from beneath his feet, flitting off to a very short distance, and descending again to the thickest parts of the beds. It also frequents the wattles and gums during their flowering season, and appears to be attracted to their blossoms quite as much for the insects as for the nectar, the stomachs of all those dissected containing the remains of coleoptera and other insects. It is rather shy in disposition except when closely engaged in procuring food, when it may be approached within a few yards or so. Its flight is extremely quick and darting and performed with a zigzag motion; and its note, which is a monotonous shriek, is somewhat loud for so small a bird."

In this connection I may give a note Dr. Cleland has sent me: "The Proteaceæ seem especially to attract the various Honey-eaters; Banksias, Grevilleas and Adenanthes are especially favoured. I have also shot *Acanthorhynchus* here, just after feeding on a flower of *Adenanthis*, and the crown was dusted with pollen. When the tip of the bird's beak was at the bottom of the flower, the stigma bent over and touched the crown of the head. The same dusting of the crown with pollen and the same size of the bill as regards the flower was noticed in the case of *Glyciphila fulvifrons* and a *Grevillea* or *Adenanthis*. The striping of the breast of *Anthochaera carunculata* with its dash of yellow is strikingly like the cones of flowers of many Banksias, on which this bird very largely feeds. The livers of Ptilotes and Glyciphilæ are very frequently found to be a light canary-yellow (fatty infiltrated livers pathologically), probably from the very large amount of sugary foods. Many of the proteaceous flowers, if sucked, are very sweet, the Banksia I recently handled made my hands so sticky I could do nothing; large drops of honey were at the base of each flower. I think there is a very close relation between the Proteaceæ and the Honey-eaters and that the length of bill of the latter and the curve is designed to harmonize with the shape of the flowers, and the bent styles of the flowers so frequently met with are meant to bend down so as to touch the birds' crown and so insure cross-fertilization by depositing pollen there."

Captain S. A. White has written me: "Pretty well the whole of the (South-eastern) Australian coastal belt and the islands has one or other of the forms of this species. It is found mostly in the heath-like country and where there is much undergrowth composed chiefly of flowering plants.

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They often move out of the Mount Lofty Ranges in the autumn and go out upon the plains. Their flight is swift and erratic at times, their note shrill and loud for so small a bird. In South Australia the nesting season is from September to November. Food consists of honey and insects; they will take the latter from the flowers and off the foliage and will also catch insects upon the wing. The nest is cup-shaped, constructed with bark and grass neatly lined, placed in a thick bush. They frequent the gardens and are often seen hovering in front of a blossom after the manner of the humming birds. The Kangaroo Island form is very plentiful and found all over the island, and its habits seem the same as those of the mainland bird. The Tasmanian form is also plentiful and I found them all over that state both in the settlers' gardens and in the thick scrub."

Mr. J. W. Mellor's notes read: "The Spinebill is truly a pretty little Honey-eater and very animated in all its habits, being exceedingly energetic in sucking the nectar from the flower and I believe lives more on this than upon insect life. I have noted them very often on my place Glenburne at Mount Lofty, in the thickly wooded parts, where they flit about, and are especially fond of the honey from the small flowers of the tree fuchsia, thrusting their long curved needle-like bills up the tubes of these hanging flowers and sucking the honey out in a few moments, elinging the while by their slender little feet to some leaf or twig in close proximity to the bunch of flowers. They also like to suck the flowers of the native heath, as these are like small tubes, and only such slender billed birds, as this species, could extract the honey. I have sometimes seen stray individuals at the Reedbeds, and also even in the gardens in the City of Adelaide and the surrounding suburbs, but the real habitat seems to be the rough and rugged hills where the foliage is thick and the flowers are in abundance. The call of the Spinebill is a pleasing musical note, like the silvery tinkling of a small bell, ting, ting, ting, uttered both while in flight and when perched in the foliage. The Tasmanian form I have seen in a host of localities in that country during several visits. The birds revel in the deep gullies where there is a wealth of nature, the bell-like notes being exceptionally pleasing as it flits about in its characteristic way, the short silvery notes seeming to ring out with unusually musical tones. I have also seen the Kangaroo Island form in fair numbers in its home, as it is universally distributed over the large area of that island. They love the thickly timbered parts where the larger eucalypts grow and where thick undergrowth with a plentiful supply of flowers exist from which to secure their honey food, for although they feed on insect life to a certain extent, their chief food is honey, and this can be obtained in these sunny climes even in the depth of winter, although at this time of year it is not so plentiful as in the

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spring and summer. The note of this bird resembles that of the mainland form, being a silvery ting, ting, ting, uttered while the bird flits from twig to twig, and also when taking a longer flight, as it is a restless little thing and ever on the move. I noted it fairly plentiful in the remote and quiet eucalyptus scrubs at the western end of the Island; there happened to be a pool of water in the quiet scrub and I sat quietly down and watched these little birds darting down and washing themselves in the water until they appeared like little bits of a dirty rag, for the weather was very hot, but they soon plumed themselves and were as bright as ever."

Mr. Edwin Ashby has written: "Common throughout the Mount Lofty Hills in South Australia and the hilly country in Victoria and New South Wales. In my own garden it is especially fond of gathering honey from the fuchsia, its long slender bill and tongue being specially adapted to gathering the nectar from such tubular flowers. Its favourite haunts are where various species of the beak-like *Epacris* grow."

Mr. E. J. Christian writes: "Plentiful in the Blue Mountains in New South Wales. Often seen fluttering before a blossom, with its tiny curved bill stuck into the flower gathering honey. It is often called the Humming Bird of Australia. While thus engaged it often breaks out into a beautiful song. It seems to come to Melbourne for the winter months and then goes, like the Robin, away to the gullies to nest. I noticed it used to sing most on wet days, in fact oftentimes I only heard it on wet days. Every winter we had two pairs which frequented the garden, in Melbourne, and used to feed on the heath and on the lime-tree blossoms."

Mr. F. E. Howe's notes read: "The call of this sprightly and beautiful creature (not unlike a certain song of *Eopsaltria*) is heard on every hand as they pursue one another from tree to tree. At the end of winter when the heath is at its best great numbers congregate to feed on the honey, probing their long bills into the blossoms and hanging in every conceivable position, making it a nosegay indeed. During September and October their pretty nests are found placed in the Mimosa and Melaleuca and in the Cherry-tree (*Exocarpa*), and one was found at Ferntree Gully fairly high up in the Hazel. The clutch is usually two but three is not uncommon. The nest takes about twelve days to complete and incubation a little longer. One pair whose eggs had been taken on Oct. 17th had young about with them on Dec. 5th, or forty-nine days after."

Mr. L. G. Chandler has sent me a note: "This species feeds principally on the nectar extracted from flowers. Small flies and moths are added to their diet. One may be sitting on a branch engaged in preening its feathers, when an insect passing, it darts out to secure it. While the bird is flying the

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wings make a peculiar clapping sound. I noticed many of these birds at Olinda, Victoria, bathing in a water course on the 12th July, 1908. The day was a mild one for the season of the year but the water was extremely cold. The birds were attracted to the locality by the presence of heath in flower. They entered the water while on the wing and splashed joyfully for a few seconds on the surface. I have often seen a mature bird chasing a young one, a few months old, through the scrub. Occasionally they will engage in mimic combat on a limb or in the air. This is shortly after the breeding season. They show no fear of man and can often be seen in suburban flower-gardens."

It is curious to record that among the Watling drawings is a painting of this bird, No. 103, to which Watling has appended a note: "This bird lives on flies and honey; when flying it makes a singular noise as if the tips of the wings were beat together under the bird's belly. It hovers over flowers and extracts honey with its brush tongue." This note was apparently not seen by Latham as he did not reproduce it, so that it was not published until Sharpe examined the Watling drawings.

So little has been written about this well-known bird that Mattingley's beautiful little word-picture may be quoted in full: "One of the most beautiful-liveried of our southern Honey-eaters, the Spinebill has been aptly named on account of its spine-like beak, which is eminently adapted to sip the deep-seated nectar situate in long, cylindrical, bell-like flowers and pendulous blossoms, because of its long, slender, and somewhat recurvent structure. It is indeed a fascinating sight to observe a pair of Spinebills fluttering and hovering in front of a bunch of wild flowers which are to be found growing on a shrub. It is truly marvellous how the bird can drink in the honeyed contents with the aid of its brush-like tongue while suspended in mid-air in this manner, uttering meanwhile its shrill but musical note. It is thus able, whilst on flight, to obtain the delectable contents of those flowers that are otherwise inaccessible to it, especially those that would break off owing to their fragility if alighted on by the bird when searching for food. These dainty birds exhibit little fear, as a rule, when approached, and one can readily observe their handsome plumage whilst they are ravishing the flowers for their sweet contents, and at the same time fertilizing them by unconsciously carrying the pollen from one flower to another."

Le Souëf and Macpherson, writing of the birds of Sydney where this bird was first described 120 years before, noted: "This active bird is a resident, numerous in our gardens, but more especially those in the vicinity of the parks. It is often seen flitting about the flower-beds, taking nectar from the flowers and chasing insects. The wings move very rapidly in flight, and make a 'Thirup' sound."

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When Gould proposed the genus *Acanthorhynchus* for this group he included three species, *A. superciliosus* Gould, *A. tenuirostris* (Latham) and *A. dubius* Gould, the first named from West Australia, the last from Tasmania. He wrote regarding the last: "Although I have given the name of *dubius* to this species on account of its close resemblance to *Acanthorhynchus tenuirostris*, I have but little doubt that it will ultimately prove to be distinct."

In his *Birds of Australia* he wrote: "On referring to the above list of synonyms, it will be seen that I formally entertained an opinion that there were two species of the genus very nearly allied to each other, the one a native of Tasmania, and the other of the continent of Australia; the former being distinguished from the latter by its smaller size in all its admeasurements, by the crescent-shaped markings of the neck, and by the brown of the abdomen being much deeper in colour; I am now, however, inclined to believe they are identical; but should the Tasmanian bird to which I have given the name of *dubius* prove to be merely a local variety, this species will be found to range over Tasmania and all the south-eastern portions of Australia."

In his "Introduction" published later he retracted, writing: "Van Diemen's Land is the native habitat of the species I have named *A. dubius*, which, as will be seen, I had made synonymous with *A. tenuirostris*, but which I am now inclined to consider distinct, an opinion in which Mr. Blyth coincides."

Then in his "Handbook" he reprinted the former account in full without comment, apparently overlooking his retraction. Of course, Gadow lumped without much consideration and was followed by most workers until A. G. Campbell, dealing with Kangaroo Island birds, wrote: "I would suggest that the specific name *halmaturina* be applied to *Acanthorhynchus tenuirostris*," and then included "*Acanthorhynchus halmaturina* (new subspecies). This presents some variations worthy of note. Compared with the mainland form the tail has less white tip—·75 inch against 1·0—and the abdomen and throat are both much lighter in colour. The crown and collar are also much lighter—the latter, in fact, of a male specimen being as light as in a female of the mainland, which, of course, is always the lighter and smaller of the sexes. The colour of the abdomen of this new species is ochreous-buff, not rufous-brown. The measurements are interesting:—

Victoria	Length 5·75,	Bill ·9,	Wing 2·75,	Tail 2·5,	Tarsus ·7 in.
Kangaroo Island	5·3	·88	2·6	2·3	·74
Tasmania	5·2	·8	2·5	2·25	·75

The Tasmanian form, which was named by Gould *A. dubius*, is of all the darkest in plumage. The Kangaroo Island form, by its lighter colour and duller markings, has differentiated from the parent stock in a different fashion."

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Previously he had concluded: "The Tasmanian form of this Honey-eater was named by Gould *A. dubius*, being smaller, shorter in the bill, but withal noticeably darker than *A. tenuirostris*. If such as the Magpie and the Browntail remain separate, this should be treated as a distinct species also. The female of *A. dubius* is duller in plumage than the male, and the bill shorter by .1 inch."

Ramsay had admitted it in his "Tabular List" in 1888 as distinct without comment.

In my "Reference List" in 1912 I criticised the whole of the forms and concluded that the Tasmanian form was a valid subspecies and that the Kangaroo Island bird also deserved that rank, but that many other local forms were also determinable.

I allowed instead of three doubtful species, six subspecies with distribution and diagnostics thus:

Acanthorhynchus tenuirostris tenuirostris (Latham).

New South Wales.

Acanthorhynchus tenuirostris cairnsensis Mathews.

"Differs from *A. t. tenuirostris* in its paler under-surface, the throat markings being very obscure and the abdomen markings paler. Cairns, North Queensland."

North Queensland.

Acanthorhynchus tenuirostris victoriæ Mathews.

"Differs from *A. t. tenuirostris* in its darker coloration above and below. (Olinda) Victoria."

Victoria.

Acanthorhynchus tenuirostris loftyi Mathews.

"Differs from *A. t. tenuirostris* in its smaller size, and in having the head and under-surface lighter coloured. Mount Lofty."

South Australia.

Acanthorhynchus tenuirostris halmaturinus A. G. Campbell.

Kangaroo Island.

Acanthorhynchus tenuirostris dubius Gould.

Tasmania.

These were maintained unchanged in my 1913 "List," and the only recent comment on any of the forms is that by Campbell and Barnard who recorded: "*Acanthorhynchus cairnsensis*. The Spinebill was observed on the tableland (at Cardwell). It, in general, is a smaller bird than the southern species, and the throat markings are nearly obsolete, but our specimen was not paler coloured on the under-surface, as mentioned by Mathews."

ACANTHORHYNCHUS SUPERCILIOSUS.

WHITE-BROWED SPINEBILL.

(PLATE 519.)

ACANTHORHYNCHUS SUPERCILIOSUS Gould, Synops. Birds Austr., pt. II., pl. (27), April 1st, 1837 : " Van Diemen's Land " error = West Australia (Perth).

Acanthorhynchus superciliosus Gould, Synops. Birds Austr., pt. II., 1837 ; *id.*, Birds Austr., pt. XI. (Vol. IV., pl. 62), June 1st, 1843 ; *id.*, Handb. Birds Austr., Vol. I., p. 553, 1865 ; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 190, 1878 ; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 145, 1884 ; Ramsay, Tab. List Austr. Birds, p. 13, 1888 ; Hall, Key Birds Austr., p. 37, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 357, 1901 ; Milligan, Emu, Vol. II., p. 73, 1902 ; *id.*, *ib.*, Vol. III., pp. 12, 18, 22, 1903 ; H. E. Hill, *ib.*, p. 227, 1904 ; Lawson, *ib.*, Vol. IV., p. 135, 1905 ; North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 104, 1906 ; Mathews, Handl. Birds Austral., p. 93, 1908 ; S. A. White, Emu, Vol. XX., p. 128, 1921 ; Ashby, *ib.*, p. 135 ; Le Souëf, *ib.*, p. 144 ; Alexander, *ib.*, p. 167.

Acanthorhynchus superciliosus superciliosus Mathews, Nov. Zool., Vol. XVIII., p. 398, 1912 ; *id.*, List Birds Austr., p. 266, 1913.

Acanthorhynchus superciliosus wilsoni Mathews, Nov. Zool., Vol. XVIII., p. 398, Jan. 31st, 1912 : Wilson's Inlet, South-west Australia ; *id.*, List Birds Austr., p. 266, 1913.

Acanthorhynchus suffuscula suffuscula Mathews, Austral Avian Record, Vol. II., pt. 7, p. 131, Jan. 28th, 1915.

Acanthorhynchus suffuscula Mathews, *ib.*

Acanthorhynchus suffuscula wilsoni Mathews, *ib.*, p. 132.

DISTRIBUTION. South-west Australia from Perth to Stirling Ranges.

Adult male. Top of head, including fore-head and nape, blackish with slightly paler edges to the feathers, which imparts a scalloped appearance ; lores, ear-coverts, and a band across the breast black ; chin, moustacial streak, and a band across the fore-neck white ; throat and a band across the hind-neck chestnut ; mantle, back, rump, upper tail-coverts, scapulars, and upper wing-coverts olive-brown ; flight-quills dark brown margined with white on the inner-webs ; tail blackish on the middle feathers—becoming paler towards the outer ones, the inner webs of which are white on the terminal portion, the outer-web of the outermost feather on each side is partially white ; abdomen, sides of body, thighs, and under tail-coverts pale buff ; axillaries buffy-white ; under wing-coverts and inner-margins of quills below white, remainder of quill-lining hair-brown ; lower aspect of tail similar to its



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ACANTHORHYNCHUS SUPERCILIOSUS
 (WHITE-BROWED SPINEBILL)
 GLICIPHILA MELANOPS
 (TAWNY-FRONTED HONEY-EATER)

~~ETHNOLOGICAL~~ MUSEUM MELBOURNE

WHITE-BROWED SPINEBILL.

upper-surface but paler on the dark pattern. Bill very dark horn, feet brown, eyes red. Total length 145 mm. ; culmen 21, wing 63, tail 57, tarsus 20. Figured. Collected at Wilson's Inlet, South-west Australia, on the 28th of April, 1910, and is the type of *A. s. wilsoni*.

Adult female similar to the adult male.

Eggs. Two eggs usually form the clutch. A pair taken at Perth, Western Australia, on the 8th of November, 1902, is of a pale pinkish-white ground-colour, spotted with chestnut and dull purplish-grey, the markings being confined chiefly to the larger end of each egg. Swollen ovals in shape ; surface of shell smooth and slightly glossy. 18-19 by 13 mm.

Nest. Very similar to that of *A. t. tenuirostris*, except that it is *slightly smaller* than that of the latter.

Breeding-months. August to December.

BEFORE Gould went to Australia he published his *Synopsis of the Birds of Australia*, and introducing the new genus *Acanthorhynchus* for the well-known *Certhia tenuirostris* of Latham, added a new species, *A. superciliosus*, giving as the locality Van Diemen's Land. Upon receipt of further specimens Gould discovered the error and then wrote : "Hitherto I have only received this fine and well-marked species of Spine-billed Honey-eater from Western Australia, but hereafter it will doubtless be found to range over a ^{much} greater extent of country ; although a very local bird, it is tolerably abundant both at Swan River and King George's Sound, and is found to give a decided preference to the forests of Banksias, upon the blossoms of which trees it almost solely subsists. Its food consists of insects and honey, for obtaining which its delicately organised bill is peculiarly adapted. Like its congeners, this species occasionally frequents the low shrub-like trees, and sometimes is even to be observed upon the ground in search of food. In its actions it displays great activity, darting about from branch to branch with a rapid zigzag motion ; its flight is irregular and uneven, but it often rises perpendicularly in the air, uttering at the same time a rather pretty song."

Mr. Tom Carter has written me : "In your 'Reference List' of 1912 this species is given as occurring throughout West Australia. I have only observed it in the coastal districts of the south-west, where it is very abundant. It was never seen about Broome Hill, nor in Gascoyne district."

Captain S. A. White states : "This is the most beautiful of the family and is fairly plentiful over the south-western districts of West Australia, especially along the coast-line. They were common round Perth in 1889 ; their habits and food seem to be the same as those of the Eastern species and they nest during September, October and November."

Milligan's notes from the Margaret River district, South-west Australia, read : "These birds were numerous in the banksia and tea-tree country. I

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did not discover any nests in October; probably they had nested, for I had already observed nests and young near Perth in early September."

From the Stirling Ranges he noted: "We secured several specimens of the White-browed Spinebill and in every male specimen the head was black, or almost so, not the greyish-olive of the mantle and back."

Writing of the Birds of the Moore River, Lawson observed: "As far as I could see, this beautiful species was absent from the immediate neighbourhood of Mogumber and the country to the east. I first encountered it 10 miles down the river, and more commonly still further to the west. It seemed partial to the oases of banksia and the scrub verging on the sand plains."

On the occasion of the recent meeting of the Royal Australasian Ornithologists' Union in Western Australia several notes appeared by eastern ornithologists. Thus Captain S. A. White wrote regarding the Margaret River district, confirming Milligan's account: "This charming little bird was found all over the country—in the big timber, brush, and heath-like country on the coast—and their sharp note was to be heard all through the day. They were often seen clinging to the large bottle-shaped banksia flowers. These birds were nesting during our visit. Two nests were found; one contained one young one and the other two."

Ashby simply wrote: "Common at Claremont."

Le Souëf reported: "A fair number of this Spinebill was seen on the Porongorups. They are much quieter, less demonstrative, and have weaker notes than has the eastern bird."

Alexander, in his *List of the Birds of the Perth District*, states: "Resident. Very common, especially in the open parts amongst the flowering bushes."

In my "Reference List" I separated

Acanthorhynchus superciliosus superciliosus Gould.

West Australia (Perth).

Acanthorhynchus superciliosus wilsoni Mathews.

"Differs from *A. s. superciliosus* in being much darker on the abdomen and flanks. Wilson's Inlet, South-west Australia."

South-west Australia.

No alteration was made in my 1913 "List," but a little later I considered that Bechstein's *Certhia suffuscula*, given to a painting of an immature bird, was referable to this species and of course had long priority over Gould's name.

However, upon reconsideration, I determined that the painting, though a poor one, was undoubtedly made from the eastern form, and I have referred it to that synonymy and reinstated Gould's name for the western one. And now add

Acanthorhynchus superciliosus stirlingi, subsp. n.

"Differs from the form from Perth in having a black head. Stirling Ranges."

GENUS—GLICIPHILA.

GLICIPHILA Swainson, Classif. Birds, Vol. II.,
p. 326, July 1st, 1837. Type (by monotypy) *G. fulvifrons* Swainson =
Certhia melanops Latham.

Also spelt—

Glyciphila Gould, Synops. Birds Austr., pt. IV., p. 6, 1838.

Glycyphila Cabanis, Mus. Heine., Vol. I., p. 117, 1851.

SMALL "Honey-eaters" with long, stout, curved bills, long wings, long square tail and rather long and slender legs and feet.

The bill is longer than the head, curved, tip with a posterior notch and then the edge very minutely serrate; culmen expanded basally and keeled, anteriorly laterally compressed but rounded; nasal groove long, more than one-third the length of the culmen, the nostrils linear, with a strong operculum; frontal feathering advancing a little and nasal bristles weak but present, though rictal bristles are scarcely discernible; interramal space about one-third the length of the curved under-mandible and feathered.

The wing has the first primary short, less than half the length of the second, and less than one-third the length of the third; the second is equal to the seventh, but much longer than the long secondaries, the third, fourth, fifth and sixth primaries subequal and longest.

The tail is long and square.

The legs are rather long and slender, the front portion of the tarsus obscurely scutellate, generally appearing as if booted in the adult, though scutes clearly seen in immature birds; bilaminate posteriorly; the toes slender and comparatively long; the outer toe longer than the inner, the middle toe and claw longer than the hind-toe and claw, which however is much stouter; the anterior toes are scarcely joined basally.

Order PASSERIFORMES.

Family MELITHREPTIDÆ.

No. 649.

GLICIPHILA MELANOPS.

TAWNY-FRONTED HONEY-EATER.

(PLATE 519.)

CERTHIA MELANOPS Latham, Index Ornith. Suppl., p. xxxvi. (after May 30th), 1801 : New South Wales, based on (Lambert drawing) Watling drawing No. 99 = Sydney.

Certhia melanops Latham, Index Ornith. Suppl., p. xxxvi., 1801 ; Gould, Ann. Mag. Nat. Hist., Vol. XI., p. 355, 1843.

Black-eyed Creeper Latham, Gen. Synops. Birds, Suppl. II., p. 165, 1801.

Certhia mellinora Bechstein, Kurze Uebers. Vögel, p. 198 (pref. April 12th, 1810), 1811 : Sydney (misprint for *mellivora*).

Certhia mellivora Shaw, Gen. Zool., Vol. VIII., pt. I., p. 245, 1812 : New South Wales.

Not *Certhia mellivora* Latham, Index Ornith. Suppl., p. xxxiii., 1801.

Meliphaga albiventris Stephens in Shaw's Gen. Zool., Vol. XIV., p. 261 (end), 1826 : new name for preceding.

Meliphaga fulvifrons Vigors and Horsfield, Trans. Linn. Soc. (Lond.), Vol. XV., p. 317, Feb. 17th, 1827 : New South Wales.

*Philedon rubrifrons** Lesson, Voyage de la "Coquille," Zool., Vol. I., livr. 14, p. 646, Jan. 9th, 1830 : New South Wales.

Gliciphila† *fulvifrons* Swainson, Classif. Birds, Vol. II., p. 326, 1837 ; Gould, Birds Austr., pt. x. (Vol. IV., pl. 28), March 1st, 1843 ; *id.*, Handb. Birds Austr., Vol. I., p. 495, 1865 ; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 188, 1878 ; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 210, 1884 ; Legge, Papers Proc. Roy. Soc. Tasm., 1886, p. 240, 1887 ; Ramsay, Tab. List Austr. Birds, p. 12, 1888 ; Hall, Key Birds Austr., p. 39, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 370, 1901 ; Littler, Emu, Vol. II., p. 170, 1903 (Tas.) ; Milligan, *ib.*, p. 172 (W.A.) ; *id.*, *ib.*, Vol. III., pp. 11 and 18 (S.W.A.) ; MacLaine, *ib.*, p. 192, 1904 (Tas.) ; Milligan, *ib.*, Vol. IV., pp. 2, 6, 10 (W.A.) ; Fletcher, *ib.*, p. 15 (Tas.) ; Lawson, *ib.*, p. 135, 1905 (W.A.) ; A. G. Campbell, *ib.*, Vol. V., p. 143, 1906 (King Island) ; North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 71, 1906 ; Howe, Emu, Vol. VIII., p. 130-1, 1909 (Vic.) ; *id.*, *ib.*, Vol. IX., p. 233, 1910 (Vic.) ; Fletcher, *ib.*, Vol. X., p. 137, 1910 (Tas.) ; Littler, Handb. Birds Tasm., p. 57, 1910 ; Whitlock, Emu, Vol. X., p. 313, 1911 (W.A.) ;

* *Philedon aurifrons* Lesson, Traité d'Ornith., livr. 4, p. 301, Sept. 25th, 1830, has nothing to do with this bird.

† Also spelt *Glyciphila* and *Glycyphila*.

TAWNY-FRONTED HONEY-EATER.

Fletcher, *ib.*, Vol. XI., p. 106 (Tas.); S. A. White, *ib.*, Vol. XIII., p. 31, 1913 (S.A.); Chandler, *ib.*, p. 43 (Vic.); S. A. White, *ib.*, Vol. XIV., p. 143, 1915 (Mallacoota); Alexandor, *ib.*, Vol. XX., p. 167, 1921 (W.A.).

Gliciphila melanops Gray, Annals Mag. Nat. Hist., Vol. XI., p. 191, 1843; Sharpe, Hist. Coll. Nat. Hist., B.M., Vol. II., p. 127, 1906; Mathews, Handl. Birds Austral., p. 94, 1908; Hall, Emu, Vol. IX., p. 129, 1910 (S.A.); Cleland, *ib.*, Vol. XI., p. 90, 1911 (Food); Sullivan, *ib.*, p. 115 (Vic.); S. A. White, *ib.*, Vol. XII., pp. 4-5, 1912 (S.A.); Wilson, *ib.*, p. 38 (Vic.); Alexander, *ib.*, Vol. XVI., p. 33, 1916 (W.A.).

Gliciphila melanops melanops Mathews, Nov. Zool., Vol. XVIII., p. 399, 1912; *id.*, List Birds Austr., p. 266, 1913.

Gliciphila melanops chandleri Mathews, Nov. Zool., Vol. XVIII., p. 399, Jan. 31st, 1912: (Frankston) Victoria; *id.*, Austral Av. Rec., Vol. I., p. 61, 1912; *id.*, List Birds Austr., p. 266, 1913; Belcher, Birds Geelong, p. 333, 1914; S. A. White, Emu, Vol. XVI., p. 14, 1916.

Gliciphila melanops crassirostris Mathews, Nov. Zool., Vol. XVIII., p. 399, Jan. 31st, 1912: Tasmania; *id.*, List Birds Austr., p. 267, 1913.

Gliciphila melanops westernensis Mathews, Nov. Zool., Vol. XVIII., p. 399, Jan. 31st, 1912: Wilson's Inlet, South-west Australia; *id.*, List Birds Austr., p. 267, 1913.

Gliciphila melanops braba Mathews, Austral Avian Record, Vol. I., pt. 2, p. 49, April 2nd, 1912: Kangaroo Island; *id.*, List Birds Austr., p. 267, 1913.

Glyciphila breba S. A. White, Emu, Vol. XII., p. 264, 1913.

Glyciphila crassirostris Mellor and White, Emu, Vol. XII., p. 163, 1913: Flinders Island.

DISTRIBUTION. New South Wales, Victoria, South Australia, Kangaroo Island, South-west Australia and Tasmania.

Adult male. Fore-part of head, including lores, cinnamon; a superciliary line of greyish-white which extends on to the hinder margins of the ear-coverts; feathers in front and behind the eye, ear-coverts, and a line down the sides of the neck blackish-brown; hind-neck and mantle uniform dusky-brown; back dark brown with slightly paler shaft-lines to the feathers; wings dark brown with pale edgings to the feathers, which incline to yellowish-green on the flight-quills, the inner-webs of which are margined with rufous-buff; rump and upper tail-coverts dusky-brown with a greyish tinge; tail dark brown; chin, throat, and fore-neck white; middle of breast, abdomen, and under tail-coverts whitish; sides of breast and sides of body drab-grey with some dark brown markings on the former; axillaries, under wing-coverts, and margins of flight-quills below bright chestnut; remainder of quill-lining dark brown; lower aspect of tail similar to its upper-surface but rather paler. Bill black, feet horn, eyes brown. Total length 158 mm.; culmen 18, wing 82, tail 68, tarsus 22. Figured. Collected at Frankston, Victoria, and is the type of *G. m. chandleri*.

Adult female similar to the adult male.

Young "birds resemble the adult but have most of the feathers of the upper-parts narrowly centred with whity-brown and the wings and tail-feathers duller in colour; the fore-head only has a reddish-fulvous wash; a small spot on front of the eye and the ear-coverts brown; chin and upper throat pale yellow; lower throat dull white; remainder of the under-surface browner than that in the adult with sagittate

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markings of blackish-brown on some of the feathers on the upper breast. The last trace of immaturity is exhibited in a few yellow feathers on the centre of the upper throat." (North.)

Eggs. Two to three eggs form the clutch. A clutch of two eggs taken at Freshwater, Manly, near Sydney, New South Wales, on the 29th of September, 1901, is of a white ground-colour, spotted and finely speckled, chiefly at the larger end of each egg, with dull chestnut. Ovals in shape, surface of shell smooth and rather glossy. 20-21 mm. by 15.

The western form is as follows: a clutch of three eggs taken at Moora, Western Australia, on the 2nd of September, 1910, measure 19-21 mm. by 13-14.

Nest. A deep cup-shaped structure, composed of strips of bark, grass, etc., and well matted together with spiders' cocoon bags and cobwebs. Lined with a vegetable substance resembling very soft silken wool. The dimensions over all are $4\frac{1}{2}$ to 5 inches by nearly 3 inches deep, and inside 2 inches across by $1\frac{1}{2}$ inches deep. It is generally well hidden in a low bush in open country covered with stunted growth, the nest sometimes being within a few feet of the ground.

Breeding-months. Usually July to December (to February).

VIGORS and Horsfield, in their essay on the Australian Birds in the Collection of the Linnean Society, described a new species *Meliphaga fulvifrons*, placing it in the same section as *Certhia tenuirostris* Latham, but remarking: "One of the specimens of this species in the collection was brought by Mr. Brown from Port Jackson, where he met with it in August, 1803. The species comes very near the first sub-division of this genus (*Certhia navæhollandiæ* Latham), having a stronger bill and rather more elongated toes than the birds of the present section," but gave no notes regarding habits at all.

Consequently Gould's notes appear to be the earliest and read: "This species would appear to be distributed over the whole of the southern portion of the Australian continent, since it is to be found in New South Wales, South Australia, and at Swan River, where it is particularly abundant on the limestone hills near the beach around Fremantle; it is also an inhabitant of the northern parts of Tasmania and all the islands in Bass's Straits. Its flight is very rapid, and it frequently mounts high in the air, and flies off to a distance with a horizontal and even motion. It is an exceedingly active bird among the branches, clinging about and around the flowers of the *Eucalypti* in search of food in every variety of position. The breeding-season lasts from August to February. The song is rather remarkable, commencing with a single note slowly drawn out, and followed by a quick repetition of a double note, repeated six or eight times in succession; it is mostly uttered when the bird is perched on the topmost branch of a tree."

Mr. J. W. Mellor's notes read: "These birds are widely distributed and associated with open heath country, which has somewhat of a dreary nature owing to the sameness of the aspect that meets the eye for scores of miles out

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in the vast expanses of the Australian bush. It does not love the deep recesses of the forest as other members of the honey-eating family do, and being a bird of this type it finds flowers more scarce and resorts more to insect food than otherwise. Often when out in these arid localities the long clear whistle of this Honey-eater has attracted my attention, sounding somewhat weird when associated with the country. At times I have noted it in more salubrious localities, but not generally. It has a habit of perching on the top of some prominent dry stick, or the top of the flower spike of the grass tree or 'blackboy' (*Xanthorrhœa*), and although the place is a prominent one, the sombre colour of the bird and the somewhat upright position in which it perches makes it difficult to discern even when it is calling, especially against the sombre background. The breeding-season is from September to November in the southern parts. I have also noted this bird on Kangaroo Island and found them fairly plentiful on Flinders Island in Bass's Straits; they were located about a swampy locality where the heath and shrubs made it fairly open and congenial to them."

Captain S. A. White has written: "This bird has an extensive range but does not extend as far inland as *G. albifrons*; it is to be found out on the heath-like country on the sea coast, in the low mallee and in the timbered country alike. They are often the only bird to be found out upon the lonely low bush or heath country, and their mournful note so long drawn out is in keeping with this solitude. Their flight is swift at times but mostly very erratic—they will dart up from some low bush, remaining for a moment upon a dry stick, then up and appear to drop head first into cover, to appear in another direction after the lapse of a few minutes. They nest from September to November, the nest being cup-shaped, composed of soft bark, dry grass and rootlets, placed in a low bush."

Mr. A. G. Campbell wrote: "One nest was discovered on Kangaroo Island in November, 1905, containing four eggs, a most unusual clutch, which judging by the two types of eggs were evidently laid by two different birds. In Victoria the species frequents heather-like growth such as flourishes on all tertiary formations of a sandy nature occurring over large areas of the south and west."

Mr. L. G. Chandler has written: "My experience of this species has been in the Frankston district. They are well distributed there about the heath lands, but can hardly be called plentiful. A bird may be seen to leave a small sapling and fly fifty yards or more to another sapling. Remaining there a minute or two it will quickly return to the former position. This performance is repeated many times, and varied by the bird occasionally diving into the undergrowth where it remains out of sight for a while. The

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stunted native banksia offers great attraction when in bloom, and in the open scrub lands around Frankston wherever the banksia is growing you are certain to find this species. I noticed a bird fly from a bunch of saplings, and there must have been a nest as, though I could not find it, the birds kept flying all around me. Alighting on the ground, one, that appeared to be the female, would flap away through the burnt scrub, feigning a broken wing, in the endeavour to draw me away from the nest or young. The notes of this species are very melodious, and may be heard some distance away."

Howe has recorded from Stawell, Victoria: "A nest was found containing young about a day old; they were blind, and covered with dark grey down; gape yellow, inside of mouth bright orange. When engaged in nest building, we noticed they were always careful to alight about ten yards from the nest, and, running along the ground, approach it in that fashion. The song of this bird is very pleasing, and consists of five liquid notes, generally uttered on the wing." Later he added: "Fairly common where the porcupine grew, and in this grass nests containing young in various stages were seen."

Captain S. A. White wrote regarding the birds of Mollacoota, Victoria: "Were met with on the heath country near the coast, where they were breeding. Specimens handled showed a very light fore-head, in some cases almost white."

Writing about a trip to the Gawler Ranges, South Australia, the same writer observed: "Rarely seen on the trip. The bird's absence is no doubt due to the want of undergrowth and bush country. On the edge of the mallee, down south, we met with it here and there, and its long-drawn, mournful cry was heard several times."

Miss Fletcher, recording observations on the Honey-eaters of Cleveland district, Tasmania, has written: "I was interested to find this little bird in our district, but it was very local. It was only seen in a limited area of banksia scrub which extended along the railway line for a few miles. Owing to its shy, almost mouse-like nature, observation of its habits, without field-glasses, was difficult, for it invariably flitted out of sight amongst the undergrowth as soon as a near inspection was made. I was pleased to record it for our district, because I believe it generally prefers the banksian and boobyalla areas round the coasts. Whilst spending the last Christmas holidays at Swansea, on the East Coast, I frequently flushed these birds from the scrubs on the sandhills."

Sullivan has written regarding Mallee Honey-eaters: "The Tawny-crowned Honey-eater seemed to be confined to an area around Antwerp. In this district the birds could always be found, but I saw no signs of them outside three miles from the railway siding. It generally frequented the

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open country, particularly where the mallee shoots were a few inches above the stubble. This bird's long beak and beautifully marked slender body surely give it a high place for gracefulness even among Honey-eaters, and its song is certainly the most delicate bird music one would wish to hear. Its four notes, each repeated three times in an ascending chord, for tenderness and delicacy stand alone."

Mr. Tom Carter's note reads: "The Western Tawny-crowned Honey-eater is given in your 1912 'Reference List' as occurring through West Australia. It is a common species through most of the south-west, but not so numerous on the coastal areas as the Spinebill. It is more of an inland species, although the birds are common on the *open*, scrubby, coastal hills near Albany, and have been noted on similar country about the Margaret River. They do not seem to like heavy timber, and were never seen in the Gascoyne or North-west Cape districts. They are fairly common on open scrubby land as the sand-plain east and south-east of Broome Hill. The birds are very restless and 'fidgety' in their habits. The breeding-season is late, and extends from August into February. The nests are very bulky for Honey-eaters, and usually built in the top of a low thick bush, about two feet above the ground. The nesting material is mostly of *broad, flat* grasses or rushes and strips of bark, *rough* sort of stuff, and in the actual lining material there is little difference. Two eggs is the usual clutch, I do not recollect having seen three. January 14, 1907. Two incubated eggs. February 3, 1907. Two *fresh* eggs. July 26, 1908. Birds noted with building material in beaks. Oct. 11, 1910. Small young in nest. Feb. 17, 1912. Unusually great numbers (above notes made at Broome Hill). January 19, 1910. Two fresh eggs at Albany."

Whitlock wrote from the Stirling Ranges: "Was the commonest bird of the sand plains. I found many nests. All were within a few inches of the ground, and could hardly be called concealed. . . This species seems to be able to protect its nests from the visits of the various species of Cuckoo inhabiting the ranges, as, despite the number of nests I found, none contained a Cuckoo's egg."

Alexander wrote: "Resident (in the Perth district). Uncommon, but met with at times in fairly open country."

This bird was apparently first figured in a printed work in the second (or third) edition of Lewin's work, but no Latin name was given to it. Then Vigers and Horsfield described it in their memorable essay as *Meliphaga fulvifrons*, and soon afterwards Swainson proposed a new genus, *Gliciphila*, which was at once taken up by Gould, and the species became well known under the name *Gliciphila fulvifrons*. When Gray examined the Lambert

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drawings he recognised the figure of *Certhia melanops* Latham as applicable, and proposed the usage of *G. melanops*, but Gould demurred and continued the name of *G. fulvifrons*, querying its identity with *C. melanops* Latham. So for the next sixty years until Sharpe examined the Watling drawings when he wrote about No. 99: "This is the type of *Certhia melanops* of Latham, founded on the 'Black-eyed Creeper,' of which Dr. Gadow doubted the identity. There need be no further questions, however, on this point, and the species must be called *Gliciphila melanops* (Lath.)."

I accepted this in my "Handlist" in 1908 and have used it ever since.

No subspecies were distinguished until I prepared my "Reference List" in 1912, when I proposed three new ones thus:

Gliciphila melanops melanops (Latham).

New South Wales.

Gliciphila melanops chandleri Mathews.

"Differs from *G. m. melanops* in its paler coloration, especially noticeable on the mantle and abdomen. (Frankston) Victoria."

Victoria.

Gliciphila melanops crassirostris Mathews.

"Differs from *G. m. melanops* in its much longer bill."

Tasmania.

Gliciphila melanops westernensis Mathews.

"Differs from *G. m. melanops* in its much paler crown and smaller size. (Wilson's Inlet) South-west Australia."

West Australia.

A little later I added:

Gliciphila melanops braba.

"Differs from *G. m. chandleri* in having a much paler fore-head and in being slightly smaller; paler than *G. m. westernensis*."

Kangaroo Island, South Australia.

These five were admitted in my 1913 "List."

GENUS—PURNELLA.

PURNELLA Mathews, Austral Avian Record,

Vol. II., pt. 5, p. 111, Sept. 24th, 1914.

Type (by original designation) *Glyciphila albifrons* Gould.

At the place quoted I wrote: "From material supplied by Dr. J. Burton Cleland, I find that *Gliciphila melanops* differs generically from *Gliciphila albifrons* of my *List of the Birds of Australia*, pp. 266-267. I therefore introduce *Purnella*. Type *Gliciphila albifrons* Gould. Differs from *Gliciphila* Swainson in having a fleshy caruncle on the posterior canthus of the eye, of a deep pinkish flesh-colour."

Compared with the preceding there are many other differences. The bill is shorter and stouter, shorter than the head, the tip decurved rather strongly with a strong posterior notch, and the nasal groove extends nearly half the length of the bill.

The wing formula differs appreciably; the first primary is half the length of the second and more than one-third the length of the third; the second primary is less than the seventh and is nearly equalled by the secondaries; the fourth and fifth primaries are subequal and longest, the third a little shorter and about equal to the sixth.

The legs are stronger; the tarsus stouter and shorter; the toes are shorter, and the claws are shorter and more curved, and the whole foot is stronger.

Order PASSERIFORMES.

No. 650.

Family MELITHREPTIDÆ.

PURNELLA ALBIFRONS.

WHITE-FRONTED HONEY-EATER.

(PLATE 520.)

GLYCIPHILA ALBIFRONS Gould, Proc. Zool. Soc. (Lond.), 1840, p. 160, July 1841: York District, West Australia.

Glyciphila albifrons Gould, Proc. Zool. Soc. (Lond.), 1840, p. 160, 1841; *id.*, Birds Austr., pt. x. (Vol. IV., p. 29), March 1st, 1843; *id.*, Handb. Birds Austr., Vol. I., p. 497, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 188, 1878; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 211, 1884; Ramsay, Tab. List Austr. Birds, p. 12, 1888; Hall, Key Birds Austr., p. 39, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 372, 1901; Hall, Emu, Vol. I., p. 102, 1902 (N.W.A.); Carter, *ib.*, Vol. III., p. 91, 1903 (N.W.A.); Milligan, *ib.*, p. 225, 1904 (W.A.); *id.*, *ib.*, Vol. IV., pp. 2, 6, 10, 1904 (W.A.); Berney, *ib.*, p. 67 (Q.); Carter, *ib.*, p. 69 (W.A.); Milligan, *ib.*, p. 152, 1905 (W.A.); Berney, *ib.*, Vol. V., p. 75, 1905 (N.Q.); North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 74, 1906; Mathews, Handl. Birds Austral., p. 94, 1908; Crossman, Emu, Vol. IX., p. 89, 1909 (W.A.); Whitlock, *ib.*, p. 210, 1910 (W.A.); Macgillivray, *ib.*, Vol. X., p. 93, 1910 (N.S.W.); Wilson, *ib.*, Vol. XII., p. 38, 1912 (Vic.); Hill, *ib.*, p. 245, 1913 (Central Australia); Campbell and Kershaw, *ib.*, p. 277; S. A. White, Emu, Vol. XIII., p. 31, 1913 (S.A.); Chandler, *ib.*, p. 43, pl. x. (Vic.); Orton and Sandland, *ib.*, p. 79 (W.A.); S. A. White, *ib.*, p. 128, 1914 (S.A.); Howe and Tregellas, *ib.*, Vol. XIV., p. 72, pl. iv., 1914 (Vic.); Alexander, *ib.*, Vol. XVI., p. 41, 1916 (W.A.); S. A. White, *ib.*, Vol. XVIII., p. 198, 1919 (S.A.).

Glyciphila albifrons albifrons Mathews, Nov. Zool., Vol. XVIII., p. 399, 1912; *id.*, List Birds Austr., p. 267, 1913.

Glyciphila albifrons incerta Mathews, Nov. Zool., Vol. XVIII., p. 399, Jan. 31st, 1912: Carine, Victoria; *id.*, List Birds Austr., p. 267, 1913; S. A. White, Emu, Vol. XIV., p. 190, 1915 (Central Australia).

DISTRIBUTION. Central Australia from east to west, but apparently not north of Richmond on the Flinders River.

Adult male. General colour of the upper-surface black or blackish-brown with pale edgings to the feathers; lores cream-white; eye-ring, moustacial-streak, and sides of neck white; top of head black with pale edgings to the feathers, which imparts a



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scalloped appearance; outer-webs of flight-quills dull green, inner-webs dark brown margined with buff; rump and upper tail-coverts rust-brown, the long coverts blackish like the tail-feathers with slightly paler edgings; ear-coverts silvery-grey; chin, throat, fore-neck, upper breast, and sides of the neck black with a few minute white tips to the feathers on the throat; lower breast white with black spots to some of the feathers; abdomen, sides of the body, and under tail-coverts dull white streaked with brown; thighs buff; axillaries white; under wing-coverts and margins of flight-quills below buff, remainder of quill-lining dark hair-brown like the lower aspect of the tail. Bill and feet black, eyes reddish-brown, wattle behind the eye red. Total length 178 mm.; culmen 15, wing 81, tail 77, tarsus 23. Figured. Collected at Mungi Rock Hole, 8 miles S.E. of Mount Alexander, West Kimberley, North-west Australia, on the 30th of June, 1911.

Adult female. Similar to the adult male.

Adult male. Crown of head and nape blackish with greenish margins to the feathers; hind-neck and sides of neck dark brown intermixed with grey and yellow; back and upper wing-coverts dark brown with pale edges to the feathers; flight-quills also dark brown with yellow margins on the outer-webs and buff on the inner ones, the innermost secondaries on the upper-surface somewhat darker than the primaries and inclining to white on the margins; upper tail-coverts rust-colour; tail blackish, slightly paler at the tip and more or less fringed with dull green on the basal portion; lores, chin, and throat dull citron-yellow with a few dark spots of black on the last; eyelid yellowish followed by a brown eye-ring; an indication of a white moustacial streak, which extends to below the ear-coverts, which are dark brown; fore-neck and upper breast blackish-brown; lower breast, abdomen, and axillaries whitish with dark streaks to some of the feathers on the breast; thighs, vent, under tail-coverts, under wing-coverts, and inner margins of flight-quills below buff, remainder of quill-lining hair-brown like the lower aspect of the tail. Figured. Collected at Laverton, South-west Australia, on the 16th of October, 1905, and is the type of *G. a. lavertoni*.

Young "birds are brown above, wings brown; some of the greater coverts and the secondaries margined with whitish-brown on their outer-webs; tail-feathers brown with paler brown margins; head, ear-coverts and sides of the neck brown; chin and upper throat dull white passing into fulvous-brown on the fore-neck, which, together with some of the feathers on the upper breast are dark brown except on their margins; remainder of the under-surface dull white slightly washed with fulvous-brown; under tail-coverts dull white centred with blackish-brown; bill brown, the under-mandible yellow at the base; legs and feet bluish-grey, iris brown." (North.)

Eggs. Two eggs usually form the clutch, and vary in ground-colouring from pale pinkish-white to fleshy-pink. A pair taken at Flinders Range, South Australia, on the 21st of October, 1901, is of a pale pinkish-white ground-colour, spotted chiefly at the larger end with chestnut markings, and measure 19 by 14 mm.; swollen ovals in shape; surface of shell smooth, and slightly glossy. Another clutch of two eggs, taken in the Mallee country of Victoria on the 9th of October, 1899, is of a fleshy-pink ground-colour, well spotted and blotched with reddish-brown and dull purple, and measure 19 by 14 mm.; swollen ovals in shape; surface of shell smooth and slightly glossy.

Nest. A cup-shaped structure, composed of bark and grasses, and usually lined with the soft and silk-like brown substance removed from the seed-cones of the *Banksia*. Dimensions over all:—3 inches across by nearly 2½ inches deep. Inside egg cavity about 1½ inches across by 1½ inches deep. Nest generally placed in a small bush, and within 3 to 5 feet from the ground.

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The western form is as follows :—

Nest and eggs similar to those of *A. incerta*. A pair taken at Lake Way, East Murchison, Western Australia, on the 21st of July, 1909, is of a fleshy-pink ground-colour, well spotted, chiefly at the larger end of each egg, with reddish-brown and dull purple. Ovals in shape ; surface of shell smooth, and slightly glossy. The clutch measures 18-19 by 13 mm.

Breeding-months. Generally July or August to January.

APPARENTLY Gould described this species from specimens collected by Gilbert, but his field-notes read : " I first observed this fine species of *Glyciphila* in the great Murray scrub of South Australia, where I succeeded in killing several specimens of both sexes ; it is an inhabitant of the York and other inland districts of Western Australia, and it is also found in the interior of Victoria and New South Wales. In its disposition the present bird is remarkably shy, a trait common, it would seem, to all members of the genus. All those I observed were busily engaged in collecting their insect and saccharine food from the flowers of a species of dwarf *Eucalyptus*. Its note is rapidly repeated, and much resembles the double call of the *Pardalotus striatus*, but is much louder and more distinct. The breeding season lasts from August to February."

Mr. Tom Carter has written me : " In your ' Reference List,' 1912, the range of this species is given as West Australia generally. It is found in the northern, mid-west, and inland districts, but not in the heavily timbered south-west. These birds were seen occasionally about Point Cloates, but they were very uncertain in their visits, and in some years none were seen. They are exceedingly active in their movements, and I found them very shy and wary. There is a species of tall plant growing in that district after good rains, that has pendant blue flowers, and these birds are very partial to the honey contained in the blossoms, and are continually uttering musical tinkling notes as they feed. In 1898 at Point Cloates these birds were particularly plentiful. A nest was found July 28, 1899, built in the top of a large bunch of spinifex and partly covered by a creeping plant. It contained two young birds. January 7, 1903. Some of these birds were shot at Kellerberin."

Mr. F. E. Howe has written me : " This species we noticed during our trip to Carina in September, 1908, and at Wattle Flat, a small plain on which grew turpentine and other growth ; we observed a few pairs. They were feeding and taking the honey from a small red and yellow flower not unlike a Fuchsia, and they evidently liked it so much that they allowed us to approach quite closely before flying and often returned to it while we stood near. The call-note is loud and harsh and can be heard for a full mile in the mallee. The flight is very quick and is slightly undulating."

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Captain S. A. White states : " This species is found mostly in the interior of South Australia, where it is often very common. On our 1913 trip to the MacDonnell Ranges we met with these birds amongst the fuchsia bushes (*Correa speciosa*) and we also saw them at sundown hawking for flying ants and other insects. In 1915 in the north-west of South Australia I came upon a number in the *Eremophila* bushes which were in flower ; they often darted about amongst these bushes in a most erratic manner. The note is mournful and long drawn out."

Recording the results of a trip to the Gawler Ranges, he again wrote : " A few were met with on the south side of the ranges, but were so wary that we could not identify them ; but later on, when returning further north, we found quite a number amongst the low shrubs that grew on the banks of dry water-courses. One of their chief feeding plants is the very pretty tree fuchsia (*Correa speciosa*), and from its many-coloured flowers the birds seem to collect quite a quantity of honey and insects. They have the true *Glyciphila* zigzag flight, and utter a sharp, loud note. The very strange habit of darting about with outstretched neck and the body swaying from side to side, so common to other members of the genus, is also very marked in this bird. Stomach contents : Three small bees (heads and parts of abdomen)."

Mr. Sandland has written me : " Common at Burra, South Australia. Retires to the scrub to breed and comes out into the plains in November. The nests are hard to find as they always build low down in a thick bush. The birds are very shy and have a distinct metallic note and, were it not for this, would not be noticed much."

Mr. J. W. Mellor notes : " These birds are more often found towards the interior and more northern parts of South Australia, but when the dry weather sets in and during some seasons becomes too excessive, they are forced southwards, and I have seen them plentiful about the Cleve Ranges on Eyre Peninsula, inland from Arno Bay. They were in the tall mallee country and now and then sallied into the air to catch an insect. They were also feeding on honey, but as the flowers were scarce at this time of the year (June), being mid-winter, this food was limited and they apparently fed on insects as well."

From the Wongan Hills, West Australia, Milligan wrote : " Were very numerous, and we obtained and saw many nests and eggs. They are restless, vivacious, swift-flying birds, with a variety of call-notes. One in particular (their feeding note) resembles the repeated monosyllables, 'chink, chink.' I shot two young birds in different localities, each of which had a bright yellow throat. The bill of one of these two birds was abnormally long, even as compared with adult birds of the same species."

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Whitlock recorded from the East Murchison district: "Very common at Bore Well and around Wiluna and Lake Violet. I found a number of their neatly constructed nests. They were always placed low down."

Orton and Sandland observed: "Visits here (Moora, West Australia) in large numbers during March and April, in odd years, to feed on the white gum blossoms."

Berney has written "I have only come across this Honey-eater once—11th July, 1904—and then I obtained a male among the tea-tree along the Flinders River (Queensland). Dissection, I am sorry to say, proved that it must have had a sitting mate close by. It has a cheerful song."

Wilson wrote regarding the Victorian Mallee: "Seen in great numbers in the Kow Plains district, where many nests containing eggs and young were found. They nested freely in the turpentine bushes, but the most favoured site was on the top of a poreupine-grass tussock. In the latter case there was always a small sapling close to the nest upon which they alighted before going to the nest."

Chandler's notes from same place differ: "Very common. The favourite situation for the nest of this songster is among the dead growth at the foot of a clump of dwarf mallee. Nests were also found in the poreupine grass and in turpentine bushes."

Captain S. A. White, from the South Australian Mallee adjoining, reported: "Numbers of these birds were found in the low scrub between Lake Bonney and the river. They were attracted by the flowering shrub known as the wild or native fuchsia (*Correa speciosa*). Many fully fledged young birds were with their parents. I noticed the latter jumping about on the ground in search of insect food. One's attention is attracted by this bird's zigzag flight."

Maegillivray, writing of the region of the Barrier Range, New South Wales, noted: "White-fronted Honey-eaters were heard in a thicker clump of neelia and black oak on the creek. A nest was found, built in the top of a broken stump, two feet from the ground, and contained one young bird, fully feathered. Many other pairs were watched, but no more nests were found. We had expected to find it in fair numbers this year, but were disappointed. This species feeds on insects and honey—at this time mainly the honey from the mistletoe. The nest, constructed of wool and fibrous herbs, is usually placed in a fork of a low bush, the turpentine bush being most often favoured. We have found nests, however, in all manner of situations—at the tops of high or low stumps, in the thick fork of a neelia, or in a bunch of mistletoe. . . I have not known the species to lay more than two eggs at a sitting."

WHITE-FRONTED HONEY-EATER.

In my "Reference List" in 1912 I separated

Gliciphila albifrons albifrons Gould.

West Australia.

and

Gliciphila albifrons incerta Mathews.

"Differs from *G. a. albifrons* in its darker throat and larger size. Carina, Victoria."

New South Wales, Victoria, South Australia

? (Mallee districts only).

I made no change in my 1913 "List," but later introduced the genus *Purnella*, so that the names will now be :

Purnella albifrons albifrons (Gould).

Purnella albifrons incerta (Mathews).

Purnella albifrons lavertoni Mathews.

GENUS—RAMSAYORNIS.

- RAMSAYORNIS Mathews, Austral Avian
Record, Vol. I., pt. 5, p. 115, Dec. 24th,
1912. Type (by original designation).. *Gliciphila subfasciata* Ramsay.
- Ryanornis* Campbell, Emu, Vol. XVIII.,
pt. III., p. 186, Jan. 1st, 1919. Type
(by monotypy) *Glyciphila fasciata* Gould.

I DIAGNOSED this genus thus: "Differs from *Gliciphila* in its shorter but comparatively stouter bill, with weaker legs and feet; the wing is shorter and the tail comparatively much shorter, while the first and second primaries are proportionately shorter."

These are smaller birds than the two preceding with which they have been commonly associated and build domed nests, being the only "Honey-eaters" that do so.

The bill is short and stout, shorter than the head, the culmen arched, the tip somewhat attenuate and base expanded; the nasal groove short, less than one-third the length of the culmen; the interramal space rather large, nearly half the length of the mandible and feathered, the lower mandible nearly straight; the upper mandible is broader at base than depth of both mandibles at that point; nasal and rictal bristles obsolete.

The wing has the first primary small, less than one-third the length of the second, which is less than the sixth but longer than the seventh; the third, fourth and fifth primaries sub-equal and longest; secondaries long.

The tail is square and long but comparatively short in this group.

The feet are small; the tarsus obscurely scutellate as usual, the toes short and slender, the outer longer than the inner, the hind-toe and claw stoutest and longest.

Ryanornis could be used if *fasciatus* were separated sub-generically as it is a larger bird with a stouter bill and has the first primary proportionately longer, more than one-third the length of the second which is only equal to the eighth, while the third, fourth, fifth and sixth are about equal and longest.

The change in the breast markings from longitudinal oval spots to transverse bars is very curious as such a change is seen in the Australian Goshawks,

RAMSAYORNIS.

but is otherwise a very uncommon procedure in bird markings. The immature recalls the true *Gliciphila*, while the barring is suggested in the true *Ramsayornis*, and the domed nests of these two is a remarkable item worth more consideration than it has hitherto received.

Key to the Species.

Lower throat distinctly banded with black	<i>R. fasciatus.</i>
Lower throat faintly banded with brown	<i>R. modestus.</i>

RAMSAYORNIS MODESTUS.

BROWN-BACKED HONEY-EATER.

(PLATE 521.)

[GLYCIPHILA MODESTA Gray, Proc. Zool. Soc. (Lond.), July 13th, 1858, p. 174: Aru Islands.]

Gliciphila subfasciata Ramsay, Proc. Zool. Soc. (Lond) 1868, p. 385, Oct. 1st: Rockingham Bay, Queensland; error=Cape York, North Queensland.

Gliciphila subfasciata Ramsay, Proc. Zool. Soc. (Lond) 1868, p. 385; *id.*, *ib.*, 1875, p. 594; Gould, Birds New Guinea, pt. III. (Vol. III., pl. 46), May 1st, 1876; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 188, 1878.

Glycyphila modesta Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 215, 1884; Ramsay, Tab. List Austr. Birds, p. 12, 1888; Hall, Key Birds Austr., p. 40, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 376, 1901; North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 78, 1906; Mathews, Handl. Birds Austral., p. 94, 1908; Macgillivray, Emu, Vol. XIII., p. 177, 1914 (N.Q.); Campbell, *ib.*, Vol. XV., p. 187, 1916 (N.Q.); Campbell and Barnard, *ib.*, Vol. XVII., p. 32, 1917 (N.Q.); Macgillivray, *ib.*, p. 205, 1918; Campbell, *ib.*, Vol. XX., p. 63, 1920.

Gliciphila modesta subfasciata Mathews, Nov. Zool., Vol. XVIII., p. 400, Jan. 31st, 1912.

Gliciphila modesta ramsayi Mathews, *ib.*: Cairns, North Queensland.

Ramsayornis modestus subfasciatus Mathews, List Birds Austr., p. 267, 1913.

Ramsayornis modestus ramsayi Mathews, *ib.*

DISTRIBUTION. North Queensland, Cape York to Cairns district (Aru Islands and New Guinea).

Adult male. General colour of the upper-surface mummy-brown, including the top of the head, sides of face, hind-neck, sides of neck, entire back, upper tail-coverts, scapulars, and upper wing-coverts; flight-quills dark brown with pale edgings on the outer webs and margined with whitish on the inner ones; tail-feathers also dark brown slightly paler at the tips; loreal-streak black; under-surface for the most part cream-white; sides of breast mummy-brown; middle of breast tinged with mummy-brown; flanks streaked with mummy-brown; axillaries, under wing-coverts, and inner margins of flight-quills below buff; remainder of the quill-lining and lower aspect of tail dark brown. Bill light horn, legs and feet light brown, eyes dusky. Total length 120 mm.; culmen 13, wing 71, tail 45, tarsus 16. Figured. Collected at Cairns, North Queensland, in October 1908, and is the type of *G. m. ramsayi*.

Adult female. Similar to the adult male.



H. Grönvold. del.

Witherby & Co.

RAMSAYORNIS MODESTUS
(BROWN-BACKED HONEY-EATER)

RAMSAYORNIS FASCIATUS
(WHITE-BREASTED HONEY-EATER)

NATURAL MUSEUM MELBOURNE

BROWN-BACKED HONEY-EATER.

Adult male. General colour of the upper-surface fawn-brown, with dark spots to the feathers on the top of the head and nape and pale margins to some of the upper wing-coverts; wings and tail dark brown with pale edgings to the feathers; lores blackish; feathers in front and below the eye whitish; a narrow dark moustacial streak; ear-coverts and sides of neck like the hind-neck; chin and throat whitish slightly tinged with yellow, somewhat darker and inclining to grey on the breast; abdomen, sides of body, and under tail-coverts white; axillaries and under wing-coverts buffy-white; under-surface of flight-quills hair-brown; lower aspect of tail similar. Eyes reddish-brown, feet and bill light brown. Wing 66. Collected at Cape York, North Queensland, on the 23rd of July, 1898.

Immature. "The feathers on the back of immature birds have an ochreous-rufous wash which is more pronounced on the rump and upper tail-coverts, the upper wing-coverts and quills have ochreous-rufous margins which are more distinct on their outer webs, and the fore-neck and sides of the breast are longitudinally streaked with brown." (North.)

Eggs. Two to three eggs form the clutch. A clutch of three taken near Cairns, North Queensland, on the 1st of December, 1893, is of a white ground-colour, finely spotted and speckled (chiefly at the larger end of each egg) with dark brown and almost black markings, and measure 17-18 by 12-13 mm. Long ovals in shape; surface of shell smooth and rather glossy.

Nest. A domed structure, with a hooded side entrance, and suspended from a small twig in a bush usually within 4 to 8 feet from the ground. Composed of fine strips and pieces of paper-bark, lightly bound with cobweb and cocoon silk; lined with soft pieces of paper-bark (*Melaleuca*). Dimensions over all:—length 7 inches, diameter 3 inches; entrance (almost concealed by overhanging hood), $1\frac{1}{4}$ inches diameter; egg chamber $1\frac{3}{4}$ inches diameter; 2 inches deep from edge of entrance.

Breeding-months. August to April.

RAMSAY, who first discovered this species in Australia, has written: "This species, although possessing nothing in its sombre plumage to recommend it, is certainly very interesting on account of its peculiarly shaped nest, being the only one of the Australian *Meliphaginæ* that I have met with which constructs a dome-shaped nest. The nests were invariably placed among the drooping branches of a species of *Acacia*, always overhanging some creek or running water. All the nests I found were so situated, and my young friend, Master J. Sheridan of Cardwell, who has paid considerable attention to objects of natural history, assures me that he has never found them otherwise. . . Their note is a sharp, shrill, monotonous cry, oft repeated at intervals."

Macgillivray's note in connection with this bird deals chiefly with the parentage of the Cuckoo's eggs found in its nest: "A common Honey-eater at Cape York, where it is mostly found in the mangrove and tea-tree swamps, and in these it breeds freely from November until April. It is also of interest as it is usually the chosen foster parent of a Cuckoo, presumably the local variety of the Brush Cuckoo. The Cuckoo eggs found in this Honey-eater's

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nest are unlike those of the Brush Cuckoo from Southern Australia, and are like those described as the eggs of the Chestnut-breasted Cuckoo. The Chestnut-breasted Cuckoo is, however, an inhabitant of the tropical scrub, and not of the mangrove or tea-tree swamps where this Honey-eater nests. In these swamps, however, the Brush Cuckoo is fairly common, and no Cuckoo egg other than the one described has been found there that could be attributed to this Cuckoo. On one occasion a pair of *G. modesta* was seen chasing a Brush Cuckoo out of the swamp."

From the Claudie River Macgillivray added "Brown-backed Honey-eaters were very common birds in the trees and shrubs in the open forest. They usually nest in the tea-tree—a few before the wet season, but the majority after it has started. We found a number of their nests, mostly commencing or half built, in a tea-tree swamp on the 9th January. They are usually suspended from the ends of branches over the water. By the 21st January the nests mostly contained eggs, usually a pair. These nests are formed wholly of the fibrous bark of the tea-tree and lined with soft flaky bark from the same tree. On the 27th we waded through the tea-tree swamps near the sandalwood landing and examined numbers of these nests. The first swamp had tall tea-trees in it and clumps of small tea-tree saplings, all standing in about two feet of clear water. It is on the saplings that this Honey-eater suspends its nest. The first nest examined contained an egg of the Square-tailed Cuckoo; most of the others, incubating eggs of the Honey-eater. In a deeper portion of the same swamp we found two nests, the first containing a Cuckoo's egg and two of the Honey-eater, the other an egg of each bird. Next day, in another swamp, we found nests containing newly-hatched young. The eyes of the young birds were not open; the skin flesh-coloured and naked, and the gape pale yellow. This bird is also common on the Archier River."

Campbell and Barnard, regarding Rockingham Bay birds, wrote: "This modest coloured Honey-eater was a common bird, and many of their elongated, covered-in nests were seen, suspended chiefly in tea-trees over hanging water or creek beds. . . . It is remarkable that only two species of all the Honey-eaters construct covered nests, this and *Glyciphila fasciata* . . . Mr. Mathews is probably correct in separating these two singular nest-builders from the true *Glyciphilæ*, which construct open nests, usually in low situations."

A little later Campbell recorded McLennan's notes from the Torres Straits Islands: "Fairly numerous on Moa. 25/1/20. Follow a creek along which paper-barks are growing. Creek has been running several feet deep, but only occasional pools are now left. Three pairs of Brown-backed Honey-eaters observed building in trees overhanging water."

BROWN-BACKED HONEY-EATER.

Ramsay described a new species of *Gliciphila* from Rockingham Bay, Queensland, as *G. subfasciata*, and it was later recognised as conspecific with a bird just previously described by G. R. Gray from the Aru Islands.

When I prepared my "Reference List" I found that my birds from Cairns did not agree with birds from Cape York, but that the latter agreed with Ramsay's bird, so I wrote: "I have examined a bird sent by Ramsay at the time he described this species, and which can be regarded as a paratype, if not the actual type (which it is declared to be on the label). This bird agrees absolutely with specimens collected at Cape York, and disagrees with specimens collected at Cairns. As Ramsay was receiving collections from Cape York at the time he described his bird, I can only conclude that his specimens were erroneously localised, and came from Cape York and not from Rockingham Bay as stated."

I then named

Gliciphila modesta ramsayi.

"Differs from *G. m. subfasciata* in its much larger size (wing 71 mm.), darker coloration above and the breast markings more pronounced. Cairns, North Queensland," and transferring these to the genus *Ramsayornis*, which I introduced for this species, still admitted the two in my 1913 "List."

Campbell and Barnard, apparently ignorant of the above explanation, recently wrote regarding birds from Cardwell: "Was a common bird. We believe this Honey-eater to be a *true modesta*. If Mathews thinks it is subspecifically distinct, and should bear another name, he should have used Ramsay's *subfasciata*, and not his own *ramsayi*. *Subfasciata* was from Rockingham Bay, not Cape York, as indicated in Mathew's 1913 'List,' page 267. However, Ramsay, in his 'Tabular List' (1888) states that '*G. subfasciata*=*G. modesta*'; Broadbent in his 'List' mistook it for the other species—*G. fasciata*."

It would have been of some value had Campbell and Barnard stated whether their *true modesta* came from the Aru Islands or where; whether the Cardwell birds they examined showed the larger size and bolder markings I referred to as differentiating it. These would appear to be characteristic if their last sentence be correct, as Broadbent might mistake a boldly marked bird for *G. fasciata*, but could never mistake the faintly marked bird from Cape York such as Ramsay sent here. Moreover, as I have already pointed out in another case, the birds Broadbent collected are stated to be in the Queensland Museum and available for examination. I cannot easily examine them here while they could be compared by Campbell and Barnard with ease and accuracy.

Order PASSERIFORMES.

No. 652.

Family MELITHREPTIDÆ.

RAMSAYORNIS FASCIATUS.

WHITE-BREASTED HONEY-EATER.

(PLATE 521.)

GLYCIPHILA FASCIATA Gould, Proc. Zool. Soc. (Lond.) 1842, p. 137, Feb. 1843: Port Essington, Northern Territory.

Glyciphila fasciata Gould, Proc. Zool. Soc. (Lond.) 1842, p. 137, 1843; *id.*, Birds Austr., pt. x. (Vol. IV., pl. 30), March 1st, 1843; *id.*, Handb. Birds Austr., Vol. I., p. 499, 1865; Ramsay, Proc. Zool. Soc. (Lond.) 1875, p. 594; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 212, 1884; Ramsay, Tab. List Austr. Birds, p. 12, 1888; Hall, Key Birds Austr., p. 40, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 373, 1901; Le Souëf, Emu, Vol. II., p. 146, 1903 (N.T.); North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 76, 1906; Hall, Emu, Vol. VII., p. 27, 1907 (N.W.A.); Mathews, Handl. Birds Austral., p. 94, 1908; Cornwall, Emu, Vol. VIII., p. 139, 1909 (N.Q.); Mathews, *ib.*, Vol. IX., p. 14, 1909 (N.W.A.); Broadbent, *ib.*, Vol. X., p. 238, 1910 (N.Q.); Hill, *ib.*, p. 285, 1911 (N.W.A.); *id.*, *ib.*, Vol. XII., pp. 259-61, 1913 (N.T.); Macgillivray, *ib.*, Vol. XIII., p. 177, 1914 (N.Q.); Barnard, *ib.*, Vol. XIV., p. 48, 1914 (N.T.); Campbell, *ib.*, Vol. XV., p. 187, pl. xxx., 1916; H. L. White, *ib.*, Vol. XVI., p. 227, 1917 (N.T.); Macgillivray, *ib.*, Vol. XVII., p. 205, 1918 (N.Q.); Campbell, *ib.*, Vol. XVIII., p. 186, 1919 (N.T.).

Gliciphila pectoralis Gray, Handl. Gen. Sp. Birds Brit. Mus., Vol. I., p. 155, 1869= Feb. 2nd, 1870: new name for *G. fasciata* Gould; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 188, 1878.

Gliciphila gouldi Layard, Proc. Zool. Soc. (Lond.) 1878, p. 655, Oct. 1st: new name for *G. fasciata* Gould.

Gliciphila fasciata fasciata Mathews, Nov. Zool., Vol. XVIII., p. 400, Jan. 31st, 1912.

Gliciphila fasciata inkermani Mathews, *ib.*: Inkerman, Queensland; *id.*, Austral Av. Rec., Vol. I., p. 61, 1912.

Gliciphila fasciata broomei Mathews, Austral Av. Rec., Vol. I., pt. 2, p. 49, April 2nd, 1912: Napier Broome Bay, North-west Australia.

Gliciphila fasciata apsleyi Mathews, *ib.*: Melville Island, Northern Territory; *id.*, Austral Av. Rec., Vol. I., p. 79, 1912.

Ramsayornis fasciatus fasciatus Mathews, List Birds Austr., p. 268, 1913.

Ramsayornis fasciatus apsleyi Mathews, *ib.*; *id.*, Ibis, 1914, p. 127.

Ramsayornis fasciatus broomei Mathews, List Birds Austr., p. 268, 1913.

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Ramsayornis fasciatus inkermani Mathews, *ib.*

Ryanornis fasciatus fasciatus Campbell, *Emu*, Vol. XVIII., p. 186, Jan. 1st, 1919.

DISTRIBUTION. Across tropical Northern Australia from Napier Broome Bay to Inkerman, Queensland, and as far north as Cooktown, but apparently not at Cape York.

Adult female. Top of head and nape black with white edges to the feathers on the fore-head and sides of crown; back, wings, and tail dark brown with buff margins to the feathers; rump and upper tail-coverts rust-colour; cheeks white with a narrow blackish moustacial streak; chin and throat white; fore-neck and breast white banded with black; abdomen and sides of body buffy-white with dark brown pear-shaped centres to the feathers; under tail-coverts, thighs, axillaries, under wing-coverts, and inner margins of flight-quills below buff, outer primary-quills brownish, quill-lining dark brown; lower aspect of tail similar to its upper-surface. Bill leaden-black; lower mandible brown, feet and tarsus pale fleshy-brown, eyes brown. Total length 126 mm.; culmen 12, wing 70, tail 47, tarsus 18. Figured. Collected on Cooper's Creek, Apsley Straits, Melville Island, Northern Territory, on the 25th of October, 1911, and is the type of *G. f. apsleyi*.

Adult male. Similar to the adult female.

Adult male. Top of head, nape, lores, and sides of crown black barred with white; back, wings, and tail dark brown with whitish margins to the feathers; upper tail-coverts paler than the back and inclining to rust-colour; a narrow black moustacial streak; eyelids, sides of face, chin, and throat white; breast white barred with black; abdomen and sides of body white streaked with dark brown; thighs, under tail-coverts, axillaries, under wing-coverts, and inner webs of flight-quills below pale buff; remainder of quill-lining and lower aspect of tail hair-brown, somewhat paler on the latter. Eyes amber, feet reddish, bill dark grey. Wing 73 mm. Collected at Normanton, North Queensland, on the 24th of November, 1913.

Juvenile. Entire top of head and nape greyish with dark centres to the feathers; back, wings, and tail blackish-brown with rust-coloured margins to the feathers; flight-quills blackish, slightly fringed on the outer webs with yellow and buffy-white; upper tail-coverts uniform rust-colour; tail blackish, rather paler on the margins; sides of face and throat white; a narrow black moustacial streak; breast black with whitish fringes to the feathers; abdomen, sides of body, thighs, and under tail-coverts buffy-white; under tail-coverts and margins of flight-quills below pale buff; remainder of quill-lining blackish. Feet grey, bill yellowish, palate and gape yellow. Collected at Normanton, North Queensland, on the 9th of February, 1914.

Juvenile. Top of head and nape grey with dark centres to the feathers; back and upper wing-coverts dark brown with buff margins to the feathers; flight-quills blackish-brown narrowly fringed with buff on the outer and inner margins; rump similar to the back but more uniform; upper tail-coverts pale rust-colour; tail-feathers dark brown with pale margins; a short white superciliary streak; sides of face whitish; a narrow black moustacial streak; throat white, breast and upper abdomen also white, spotted and streaked with black; lower flanks, under tail-coverts, axillaries, and under wing-coverts buffy-white; under-surface of flight-quills and lower aspect of tail dark brown. Eyes grey, feet pale grey, bill yellow. Collected at Normanton, North Queensland, on the 8th of March, 1914.

A Nest from Cairns was placed at the end of a twig. Entrance at the side. Composed of pieces of bark and fine rootlets woven together with cobweb. Two or three gum

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leaves on the outside. Lined with soft bark. Outside 6 inches long by 3 wide. A nest from Melville Island collected on the 12th of January, 1912, 10 miles S.E. of Snake Bay, contained one Honey-eater's and two Cuckoo's eggs. The Honey-eater's egg was perfectly fresh, the Cuckoo's showed signs of incubation. This nest was built in a paper-bark sapling leaning out over Jessie Creek. The nest was suspended from the end of a limb at a height of three feet from the water. The materials were broad and fine strips of paper-bark lightly fastened together with cobwebs. The lining was very soft pieces of the same materials. Dimensions: $4\frac{1}{2}$ by $2\frac{3}{4}$ by 8 inches deep, inside $2\frac{1}{2}$ by 2 by 4 inches deep. The parent was seen leaving the nest. Another collected on the 10th of January, 1912, 10 miles S.E. of Snake Bay, contained two Honey-eater's and one Cuckoo's egg. The nest was suspended from a pendant branch of a paper-bark tree growing on the bank of Jessie Creek. The nest was about two feet from the water.

Another collected on the 12th of January, 1912, 10 miles S.E. of Snake Bay, contained two Honey-eater's and one Cuckoo's egg in clutch, apparently *C. rufulus*. This nest was suspended from a pendant branch of a paper-bark tree growing on the bank of Jessie Creek; nest limb hung over the water. The nest was about three feet from the water, was built of broad and fine strips of paper-bark, fastened together with a few strips of paper-bark. The lining was broad soft strips of paper-bark. The leaves of the branch were built into the nest. Dimensions outside: 5 by 4 by 8 inches deep, $2\frac{1}{2}$ by 2 by 4 inches deep.

Eggs. Three to four eggs usually form the clutch, though sometimes only two eggs are met with. A clutch of four eggs taken on the Macarthur River, Northern Territory, on the 12th of January, 1914, is of a white ground-colour, spotted and blotched with light and dark reddish-brown, particularly at the larger end of each egg. The clutch measures 17-18 by 13-14 mm. Swollen ovals in shape; surface of shell rather smooth, but possessing very little gloss.

Nest. A bulky domo-shaped structure, composed of paper-bark (*Melaleuca*) and hung from the end of a twig, and generally over water.

Breeding-months. October to January (to May).

THIS is another of Gilbert's discoveries in the Port Essington district, and Gould's notes read: "All the specimens hitherto collected of this species have been obtained from the Cobourg Peninsula, where, according to Gilbert, it is far from being common, for in his notes he says: 'I only once observed it near the settlement, and once again met with it on the neck of the peninsula near the mainland. Its favourite haunts appeared to be the upper branches of the *Melaleuca*, from the blossoms of which it collects its food. In both instances I observed small families of about twelve in number. Its note is a sharp, shrill, piping call, very rapidly repeated. . . Its food consists of insects generally, the pollen and occasionally the buds of flowers.'"

Mr. J. P. Rogers wrote me from Melville Island: "Nov. 20th, 1911, Cooper's Camp. Up to this date only two of this species seen here, both in the open forest near the foreshore; up to the 16th Dec. this species was very rare. Between the 26th of December, 1911, and January 14th, 1912, I was on the north side of the island. Here this species was very numerous and many nests were found. There birds were all on the creeks or in the large

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paper-bark swamps, i.e., swamps with many paper-barks growing on them. It was one of the commonest birds on the north side. Jan. 29th, 1912, Cooper's Camp again. A few were seen near here on a running creek; this creek was dry when I was here before but heavy rains have fallen and the soakage keeps a fair stream flowing. This bird is a real water lover and I have never seen many except close to water."

Cornwall, writing about birds found breeding near Mackay, North Queensland, states: "Of a modest and retiring disposition is the White-breasted Honey-cater (*Glycyphila fasciata*) and to find it at home one must again brave all the discomforts of swamp work. The nest is a pretty dome-shaped structure, made of the paper-like bark of the *Melaleuca*, and suspended over water at the extremity of the most slender twigs, where they are safe from snakes and other vermin. The square-tailed Cuckoo (*Cacomantis variolosus*) often chooses the nest of this bird in which to deposit its eggs, and it is particularly noticeable that when the Cuckoo's egg is deposited the Honey-eater lays two eggs only, but when left to itself the clutch is three. They are very late breeders. We were through the swamp at frequent intervals after the early part of October, but it was not until the 26th of December that they were seen to be building. After that date they were plentiful enough in the localities which suited them, and we found fresh eggs up to the middle of February."

Ramsay wrote in 1875: "This species is plentifully distributed over the coast country from Port Denison to Cooktown. In habits and actions they resemble *Ptilotis flava* and others."

Broadbent in 1888-89 met with it, but Campbell and Barnard deny this, apparently without proof.

Macgillivray wrote: "Met with only on the Gregory River, at the Brook Hotel, 20 miles from Burketown, where they were found feeding in the blossoming tea-tree. Not seen at Cape York. . . . A few were found amongst the blossoming trees on the Archer River."

McLennan's notes of his King River trip read: "Pera Head, 4/7/15. A few noted amongst flowering paper-barks. Glyde River. A few noted about the ridges. Liverpool River, 21/9/15. Some seen amongst the paper-barks round billabongs. King River. Fairly numerous amongst flowering trees. Roper River, 27/2/16. Fairly numerous in paper-barks in swamps. Stomach, insects."

Hill, in connection with the birds of Kimberley, North-west Australia, wrote: "Were noted in the Napier Broome Bay district only, where the first arrivals appeared on 1/12/09. By the 26th they were plentiful near all the creeks and springs, and on 1/1/10 nineteen nests were commenced along

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one small creek. The first set of eggs was taken on 5/1/10, and the last on 18/5/10. Two eggs are invariably laid, excepting in cases where a nest contains a Cuckoo's egg. I believe that when a Cuckoo's egg is the first or second egg to be deposited in the nest, the Honey-eater does not lay her full clutch, but proceeds to incubate the Cuckoo's egg only, or the Cuckoo's egg and one of her own. I noticed that where a nest contained a full clutch of Honey-eater's eggs and a Cuckoo's egg the former were always in a more advanced state of incubation than the latter."

Gould described this species as *Gliciphila fasciata* and this specific name must be maintained. Two substitutes were offered because there was another bird called *fasciata* included in the genus *Gliciphila*, but this was not in any true sense congeneric. It had not been described under the genus name *Gliciphila*, so that with the removal of either from the genus, Gould's name became unassailable.

When I prepared my "Reference List" I admitted two subspecies:

Gliciphila fasciata fasciata Gould.

Northern Territory, North-west Australia.

Gliciphila fasciata inkermani Mathews.

"Differs from *G. f. fasciata* in its lighter upper-surface and less barring on the breast. Inkerman, Queensland."

Queensland.

On receipt of series from Melville Island I reviewed the species and further separated

Gliciphila fasciata broomei Mathews.

"Differs from *G. f. fasciata* in its general paler coloration and larger size. Napier Broome Bay, North-west Australia."

North-west Australia.

Gliciphila fasciata apsleyi Mathews.

"Differs from *G. f. fasciata* in having the edges of the primaries yellowish-buff, not grey. Melville Island, Northern Territory."

In my 1913 "List" I transferred these to my genus *Ramsayornis* but otherwise made no alteration.

If Campbell's name *Ryanornis* be accepted these will read:

Ryanornis fasciatus fasciatus (Gould).

Ryanornis fasciatus apsleyi (Mathews).

Ryanornis fasciatus broomei (Mathews).

Ryanornis fasciatus inkermani (Mathews).

GENUS—GRANTIELLA.

GRANTIELLA Mathews, Nov. Zool., Vol. XVIII.,
p. 19, June 17th, 1911. New name for
Entomophila Gould. Type (by monotypy) .. *Entomophila picta* Gould.

Entomophila Gould, Synops. Birds Austr., pt. IV.,
pl. (71), April 1st, 1838. Type (by monotypy) *Entomophila picta* Gould.

Not—
Entomophila Horsfield, Zool. Researches, Java, 1824.

Also spelt—
Enthomophila Finsch, New Guinea, p. 164, 1865.

MEDIUM "Honey-eaters" with short stout rather broad bills, long wings,
long square tail and short legs and small feet.

The bill is shorter than the head, rather straight, the culmen a little
arched, the tip sharp, posteriorly notched, anteriorly compressed, basally
expanded more than usual in this group; the nasal groove fairly long, more
than one-third the length of the culmen, but the linear nasal opening short
and the operculum small; nasal bristles few and short, rictal bristles obsolete;
triangular broad feathered interramal space almost half the length of the
rather stout under-mandible.

The wing has the first primary minute, scarcely as long as the primary
covert; the second long, equal to the fifth, and little exceeded by the third
and fourth which are longest and subequal; the secondaries comparatively
short.

The tail is long and square.

The legs are short, the tarsus obsoletely scutellate in front, bilaminate
posteriorly; the middle toe and claw longer than the hind-toe and claw which
is stoutest, the outer toe longer than the inner, but all toes delicate and claws
small.

Order PASSERIFORMES.

Family MELITHREPTIDÆ.

No. 653.

GRANTIELLA PICTA.

PAINTED HONEY-EATER.

(PLATE 522.)

ENTOMOPHILA PICTA Gould, Synops. Birds Austr., pt. iv., pl. (71), April 1st, 1838 : Interior New South Wales.

Entomophila picta Gould, Synops. Birds Austr., pt. iv., April 1838 ; *id.*, Proc. Zool. Soc. (Lond.) 1837, p. 154, Dec. 1838 ; *id.*, Birds Austr., pt. xii. (Vol. IV., pl. 50), Sept. 1st, 1843 ; *id.*, Handb. Birds Austr., Vol. I., p. 530, 1865 ; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 189, 1878 ; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 219, 1884 ; Ramsay, Tab. List Austr. Birds, p. 13, 1888 ; Hall, Key Birds Austr., p. 40, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 377, 1901 ; North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 83, 1906 ; Mathews, Handl. Birds Austral., p. 94, 1908 ; Barnard, Emu, Vol. XIV., p. 48, 1914 (N.T.) ; Austin, *ib.*, p. 173, 1915 (N.S.W.) ; Ramsay, *ib.*, Vol. XIX., p. 273, 1920 (N.S.W.).

Certhionyx pictus Mathews, Nov. Zool., Vol. XVIII., p. 400, 1912.

Grantiella picta Mathews, List Birds Austr., p. 268, 1913.

Entomophila borealis H. L. White, Emu, Vol. XIII., pt. iii., p. 187, Jan. 1st, 1914 : MacArthur River, Northern Territory.

Grantiella picta cloncurri Mathews, Austral Avian Record, Vol. II., pt. 7, p. 133, Jan. 28th, 1915 : Cloncurry, Queensland.

DISTRIBUTION. Interior of Eastern Australia, South Australia, Victoria, New South Wales, Queensland to MacArthur River, Northern Territory.

Adult male. General colour of the upper-surface black, including the top of the head, sides of face, sides of neck, hind-neck, back, wings, and tail, with whitish margins to some of the upper wing-coverts, upper tail-coverts and tips of flight-quills ; outer webs of flight-quills yellow, the inner webs margined with white, the terminal portion of the quills uniform black ; tail black fringed with yellow on the outer webs and the terminal portion of the inner webs white ; throat, fore-neck, breast, sides of breast, abdomen, sides of body, under tail-coverts, axillaries, under wing-coverts and inner margins of quills below white with a few black marks on the thighs and outer margin of the wing below ; remainder of quill-lining blackish ; lower aspect of tail similar to its upper-surface. Bill yellowish with black tip, feet grey, eyes reddish-brown. Total length 160 mm. ; culmen 13, wing 90, tail 55, tarsus 18. Figured. Collected at Cloncurry, Gulf of Carpentaria, North Queensland, and is the type of *G. p. cloncurri*. The sexes are alike.



H. Gronvold. del

Witherby & Co

LACUSTROICA WHITEI
(INCONSPICUOUS HONEY-EATER)
GRANTIELLA PICTA
(PAINTED HONEY-EATER)

THE END OF THE LINE

PAINTED HONEY-EATER.

Adult female. General colour of the upper-surface blackish, including the top of the head, lores, sides of face, sides of neck, back, upper tail-coverts, wings, and tail; outer webs of greater upper wing-coverts and flight-quills fringed with yellow and margined with white at the tips of the latter; tail-feathers fringed with yellow on the outer webs with the greater part of the inner webs on the terminal portion white; feathers on the fore-cheeks minutely tipped with white; under-surface white or greyish-white, including the throat, breast, abdomen, sides of body, under tail-coverts, axillaries, under wing-coverts and inner portion of flight-quills below; remainder of quill-lining blackish like the lower aspect of the tail at the base, the terminal portion of the latter for the most part white; thighs and marginal under wing-coverts more or less marked with black. Bill yellowish with tip black, feet grey, eyes reddish-brown. Total length 150 mm.; culmen 13, wing 87, tail 52, tarsus 19. Figured. Collected on the MacArthur River, Northern Territory, on the 18th of August, 1913, and is *G. p. borealis* White.

Eggs. Two eggs usually form the clutch. A pair taken near Bathurst, on the Macquarie River, New South Wales, on the 23rd of December, 1899, is of a pale salmon-red, which is well spotted and speckled with reddish-brown and lilac, the markings becoming very massed at the larger end of each egg. Ovals in shape, surface of shell fine, and slightly glossy. 19 by 14 mm.

Another clutch of two eggs taken near Sydney, New South Wales, on the 7th of February, 1901, is of a much paler ground-colour, and measure 20 by 14-13 mm.

Nest is a rather frail cup-shaped hanging structure, suspended and secured to the needle-shaped leaves of the oak (*Casuarina*), and usually situated at the end of a drooping limb. Nest composed entirely of fine fibrous roots, matted and bound together with cobwebs, etc. The nest is transparent, and the eggs can be seen in it from the ground. Dimensions over all: $2\frac{1}{2}$ inches by 2 inches deep, and inside 2 inches by $1\frac{3}{4}$ inches deep. Nest placed up to 30 feet and more from the ground.

Breeding-months. October to February.

GOULD described this bird as a new genus and species before he went to Australia and later wrote: "This beautiful little Honey-eater is an inhabitant of the interior of New South Wales, where it frequents the myalls (*Acacia pendula*) and other trees bordering the extensive plains of that part of Australia. On a comparison of skins of this species with those of the other *Meliphagidæ*, prior to my visit to the country, I had been led to suspect that its actions and economy would be found to differ materially from those of the other members of its family, and such proved to be the case, for it is much more active among the branches, captures insects on the wing, and darts forth and returns to the same spot much after the manner of the Flycatchers. Its song is a low but not very harmonious strain, which is frequently uttered when on the wing. During flight it repeatedly spreads its tail, when the white portion of the feathers shows very conspicuously; the yellow colouring of the wing also contributes to the beauty of its appearance."

A long note by Mr. Thos. P. Austin of Cobbora, New South Wales, is here given: "I have no hesitation in saying that this is the most extraordinary little bird I have ever come in contact with, they differ in most of their habits

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to any Australian species I knew of. At one time I looked upon them as much the rarest species in this district. Until one becomes acquainted with their various notes, they can be very easily overlooked or even be mistaken for other species. They have four very distinct calls, three of which resemble notes uttered by other birds, and can easily be mistaken for them, these are *Seisura inquiata*, *Micræca fascians* and *Chalcococcyx basalis*. But their principal note is a most monotonous see-saw whistle, which when one once becomes well acquainted with it, can never be mistaken for that of any other bird I know of, but even then they are the most difficult tree-perching bird imaginable to locate actually. In some respects their habits slightly resemble those of the Mistletoe-bird, *Dicaeum hirundinaceum*, and that only when they are not breeding or nest building. Their similarity is only in the manner in which they chase each other all through the forest, from within a few feet of the ground to high over the tops of the largest trees, darting and twisting about in all directions, and as they flash past in the sunlight, within a few yards of an observer, their beauty is quite undescribable, their pink bills and golden-yellow patches on their wings showing out to their best advantage. Then they will suddenly quieten down and separate into different trees, but calling to each other practically the whole time. After feeding for a while they will perch high up, often on the topmost dead branch of a lofty tree, and keep quite still for a few minutes; but even their calling does not cease. Then suddenly one bird will probably start to chase some other species which has ventured too near, darting about after it for about half a minute, then its mate (which appears to be usually the male) will join in the chase, and chase the original chaser (the female), and so they go on at intervals throughout the day. Another peculiar habit they have is, one bird will suddenly take flight high into the air, then dart off over the tops of the trees, just as suddenly to be followed by its mate, and they appear to be flying right away, but shortly their note, will be heard coming from about 150 yards distance, then just as suddenly one or both birds will be seen, but more often only heard, somewhere close back to where the flight started from, then likely as not it will dart off again in quite another direction. I have never seen more than two birds together, and those which I have seen can always be heard about the same locality, but always to catch sight of them is quite a different matter. I might hear them quite close, and perhaps while trying to locate them I will hear them about a hundred yards away; if I follow up the sound as likely as not they will be gone in another direction. When nest building commences they change their habits, they give up the chasing, and become very silent, only uttering their notes at long intervals. When they can get it, their principal food appears to be mistletoe berries which they swallow whole, but they do

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not digest more than the outside of each berry, practically the whole fruit passes through them entire, less the skin, and they appear to have great difficulty in ejecting them, having to resort to the use of their bill to clear the glutinous mass away, this they wipe off on a branch of a tree, hence the reason for the spread of the mistletoe. During September, 1914, I shot a pair of these birds to make skins for identification, their stomachs were crammed full of whole mistletoe berries. When nesting they somewhat change their habits, and both birds assist in the task of incubation, neither bird sitting for more than half an hour at a time, and seldom that long; they are often to be seen continually changing places, the non-sitting bird upon coming into the tree gives a warning whistle, then hops down to the nest, the sitting bird gently gets off, and the other, very quickly, simply seems to slide on with a steady mouse-like movement. The nests are most difficult to find, and, when found, sometimes cannot be seen from the ground, but the eggs can often be seen through the bottom of the nest. The first time I saw this species was on September 24th, 1914, a pair of them building a nest about 25 feet from the ground in a native cypress pine tree; three days later I took a pair of their eggs from it. I saw nothing further of the species till September, 1917. Since then (this note is only dated Nov. 10, 1917) I have located about a dozen pairs, and found seven of their nests, all of which have been placed in large flowering iron-bark trees, at the extreme end (in the leaves) of long horizontal thin branches, from 30 feet to 60 feet from the ground, and I know of no bird the eggs of which are so difficult to get. I have had to resort to means which I have never found necessary with any other species. The nest is just about the most flimsy structure of bird architecture imaginable, consisting of nothing more than a shallow concave frame, composed of short pieces of thin roots, with just sufficient spiders' webs to hold it all together, and bind it to the leaves. The measurements of an average nest are as follows: depth over all one inch, depth of egg chamber $\frac{3}{4}$ inch, across the nest 3 inches. One nest I secured containing three eggs was slightly more substantial, it measured: depth over all 2 inches, depth of egg chamber $1\frac{1}{2}$ inches, and across the nest $2\frac{1}{2}$ inches. How the eggs remain in an average nest placed high up in a swaying branch, is difficult to imagine. The birds appear to be very close sitters, and no doubt they need to be. This year (1917) the first clutch of eggs I took was on October 31st, and during the next five days I took three more sets, and I now know of two other nests in the course of construction. With the exception of the set of three eggs already mentioned, all the others have been pairs. It must not be thought that I found the three nests in five days, as a matter of fact, I have been weeks watching these birds in all my spare time and found the nests by seeing the birds building

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them. Now one of the most extraordinary things about these birds is, I find, they take from three weeks to a month to build their tiny little bit of a nest."

H. L. White named the northern form but gave no account of its habits, nor did Barnard.

Recently, however, J. S. P. Ramsay, the son of the famous Australian ornithologist, Dr. E. P. Ramsay, has published a good account of the habits, from which I quote: "I was delighted to find the birds so numerous that, during that and the following week-end, nine nests were discovered within an area of about half a mile by a quarter. They were all built among the outer branches of Casuarinas; one actually overhanging the water. They varied in height from 12 to 30 feet. Six of the nine held two young birds each, two each contained two heavily incubated eggs, and one nest discovered when being built was later deserted, probably owing to continued heavy rain. All the birds were exceedingly tame, and paid little attention to anything but their particular duty at the time. . . Both parents fed the young continually, at intervals of five to ten minutes, with the exception of about two hours at mid-day, during which only an occasional visit was paid to the nest. The only food supplied was mistletoe berries which appeared to have the outer skins removed, leaving visible the sticky substance surrounding the seed. The adult birds are most bright and showy, always on the move, and continually calling to one another. They will fly long distances direct from and to different feeding trees, or from feeding trees to the nest, which makes nest-finding a much easier matter than it would otherwise be, as the scanty structure of a few interlaced rootlets is practically invisible among the attenuated 'leaves' of the Casuarinas. Both parents incubate, and the male feeds the female constantly, though I did not observe the reverse to be the case. Nearly all the adults showed a black spot or two on the breast, but the breasts of some of the young that could fly were of a beautiful snowy-white. The backs of the juveniles were a fuscous or dusky-drab, and their bills had not attained the beautiful pinkish-lilac of the bills of their parents. The eyes also had a greyish tinge that was lacking in the adult specimens."

Comparatively recently H. L. White described a new subspecies from the MacArthur River, Northern Territory, as *E. borealis*, writing:

" <i>E. picta</i>	Length 6·3 in.	Wing 3·5	Bill ·55	Tarsus ·7 inches.
<i>E. borealis</i>	6	3·3	·5	·6

The latter also differs in both sexes being darker above, the yellow on the wings being more pronounced, and in having the wing-feathers faintly tipped with white (this is more noticeable in the female). The white markings

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on the under-part of tail-feathers are much smaller, while the breast is purer white and less spotted."

Of this Barnard stated: "It was feeding on the flowers of the bauhinia trees which grew on the black soil flats. The birds were found at McArthur Station, and were not seen elsewhere."

Mr. A. J. North had written me in 1908: "I examined a collection made at Cloncurry which contained this bird."

I then described such a bird as

Grantiella picta cloncurri.

"Differs from *G. p. picta* in its larger size and darker coloration. Cloncurry, Queensland."

Consequently there will be three subspecies now on record:

Grantiella picta picta (Gould).

New South Wales, Victoria, South
Australia.

Grantiella picta cloncurri Mathews.

Queensland.

Grantiella picta borealis H. L. White.

Northern Territory.

GENUS LACUSTROICA.

LACUSTROICA North, Victorian Naturalist,
Vol. XXVI., p. 138, Jan. 13th, 1910. Type
(by monotypy) *Lacustroica whitei* North.

NORTH'S diagnosis reads: "Exposed portion of bill slightly less than half the length of head, moderately straight, equal in height to breadth at nostril, the culmen distinctly arched, and decurved towards the tip; tongue grooved above, bifid at the tip. First primary short, the second equal in length to the seventh, the almost square end of the wing formed by the third, fourth, fifth, and sixth primaries, which are almost equal in length. Tail about two-thirds of the length of the wing. Tarsi long, slender, about twice the length of the bill."

North added: "Remarks. The genus *Lacustroica* is allied to *Entomophila*, and to that section of it which includes *E. picta*, but differs from it principally in having a shorter bill, longer tarsi, and a different wing formula."

Order PASSERIFORMES.

(?) Family MELITHREPTIDÆ.

No. 654.

LACUSTROICA WHITEI.

INCONSPICUOUS HONEY-EATER.

(PLATE 522.)

LACUSTROICA WHITEI North, Victorian Naturalist, Vol. XXVI., p. 138, Jan. 13th, 1910 ;
Lake Way, East Murchison, West Australia.

Lacustroica whitei North, Victorian Naturalist, Vol. XXVI., p. 138, 1910 ; Whitlock,
Emu, Vol. IX., p. 209, pl. xv., 1910 ; *id.*, *ib.*, Vol. X., p. 72, 1910 ; Mathews, List
Birds Austr., p. 269, 1913 ; Mellor, Emu, Vol. XX., p. 242, 1921 ; Whitlock, *ib.*,
Vol. XXIII., p. 276, 1924.

Lacustroica inconspicua North, Victorian Naturalist, Vol. XXVI., p. 139, Jan. 13th, 1910 ;
alternative name only.

Lacustroica alfredi Mathews, List Birds Austr., p. 269, Dec. 31st, 1913, as synonym of
L. whitei, ex., Campbell, Emu, Vol. IX., p. 166, Jan. 1st, 1910 : *nomen nudum*.

Certhionyx whitei Mathews, Nov. Zool., Vol. XVIII., p. 401, 1912.

Lacustroica whitei neglecta Mathews, Austral Avian Record, Vol. III., pt. 3, p. 62, April 7th,
1916 : Day Dawn, West Australia

Lacustroica whitei whitei Mathews, *ib.*

DISTRIBUTION. Mid-west Australia.

Adult male. General colour of the upper-surface pale earth-brown, including the top
of the head, sides of face, back, and wings ; flight-quills and tail-feathers dark
brown ; rump and tips of tail-feathers white ; chin, throat, abdomen, flanks, under
wing-coverts, and inner margins of flight-quills white ; fore-neck, upper breast
and outer margins of under wing-coverts tinged with very pale fawn-colour ;
thighs dusky ; the basal portion of the feathers on the abdomen blackish.
Culmen black ; base of lower mandible flesh-pink ; legs and feet very dark grey ;
eyes clear brown. Total length 110 mm. ; culmen 8, wing 64, tail 43, tarsus 17.
Figured. Collected at Day Dawn, Mid-west Australia, on the 18th of May, 1903,
and is the type of *L. w. neglecta*.

Adult female. Similar to the adult male.

Immature have a tinge of yellowish-green on the throat.

Eggs. Clutch two. Shape swollen oval, texture of shell fine and slightly glossy ; colour
white moderately marked with small rich reddish-brown spots, while some of
dull purplish-grey, and appearing as if beneath the surface of the shell, are mixed

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with the other markings, but only at the larger ends of the eggs. Markings confined chiefly to the larger ends. 17 mm. by 12.

Nest. A frail structure of horsehair, loosely woven and held together by spiders' webs and cocoons, and placed near the extremity of a slender branch about seven feet from the ground. 2 to 2½ inches by 1 deep. Collected at Lake Way, East Murchison, Western Australia, on the 15th of August, 1909.

Breeding-season. Probably August to November.

THIS small genus and species was named by A. J. North from specimens collected by Whitlock, whose complete account I transcribe: "This little bird has only recently been described as new by Mr. A. J. North, from a series of skins I secured near Wiluna and Milly Pool. It is sufficiently distinct to require a new genus for its reception. It is described as belonging to the Honey-eaters. If this is the case, then as a field naturalist I should place it next to *Zosterops*, to which it has a superficial resemblance, and also some similarity in general behaviour and in its notes. In possessing a dark bar near the tip of the tail, and in certain other features, it shows a divergence. At Lake Austin, in 1903, I shot a pair of small birds I could not identify. Speaking from memory I think they were identical with the present species. They were sent down to the Perth Museum with other skins, but I never learned to what species they had been referred. This little Honey-eater is confined to tracts of country where large mulga and other tree-like bushes are growing. It does not seem to favour eucalypts, but I have seen it amongst flowering acacias. It is a very difficult bird to pick out from a party of *Acanthizæ*, busy, like itself, in searching the foliage for insect prey. It looks slightly larger than the three local species of Tits, but in its attitudes and its perpetual motion there is absolutely nothing to distinguish it from these commoner birds. The notes are altogether the best guide. They are rather difficult to describe on paper. They may, perhaps, be described as a succession of five or six monotonous, high pitched but musical, and uttered in a rapid, sibilant manner. Each bar is repeated several times, to be followed by an interval before the next cadence is commenced. Certain other notes resemble those of *Anthus australis* when engaged in a love flight, but the volume of sound produced is much less and the tone shriller. Others again, resemble those of the Carter Desert Bird, which in their turn somewhat resemble the before-mentioned notes of *Anthus*. In the generally high-pitched voice, and to a lesser degree the manner of utterance, I was reminded of the notes of *Zosterops lutea* and *Z. gouldi*. After shooting a male soon after my arrival in Wiluna, I came across a pair on 23rd July, which I resolved to watch. They were within easy distance of the main street of Wiluna, and my chances of securing nest and eggs were not enhanced thereby.

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Further observations showed them to be busy at the extremity of a horizontal branch of a narrow-leaved mulga or kindred tree. Both birds were at work, and I watched till both were away before making a closer examination. A nest was evidently just being commenced, as I could plainly see spiders' webs had been attached to the branch of the tree where the birds had been working. Progress was very slow, and I shortly left Wiluna for Bore Well, not returning until the 15th August. On returning from the latter locality I called *en route* at several nests I was watching, only to find them pulled out by the blacks. It was with some trepidation I visited my '*Gerygone*' nest, as I then called it. Tracks of blacks' feet were only too plentiful, and I hardly expected to find the nest safe. Judge of my delight when I could see the frail little structure quite intact, and with the tail of the sitting bird projecting over the side. I could just reach the branch. Cautiously bending down I peeped in. There were two remarkably large eggs for so small a bird, with the glow of the yolks shining through the shells. I carefully removed and packed them, and then broke off the branch holding the nest. The latter was a frail affair, and lacked neatness and finish in its architecture. The walls were very thin, the eggs being plainly visible from below. An attempt had been made to bend long horsehairs into a circular form, with more or less success. These were held in position by spiders' webs and cocoons, but long ends had been left dangling about in a very unfinished manner. The whole structure was sufficiently elastic, and was attached to the branch of the tree with spiders' webs. The dimensions of the nest are as follows: Long diameter, $2\frac{3}{4}$ inches; short diameter, 2 inches; depth of cup, nearly 1 inch. The eggs were quite fresh and the descriptions are as follows: At first glance resemble those of some types of *Ephthianurinae*. Shape swollen oval, texture of shell being fine and slightly glossy; colour white, moderately marked with small rich reddish-brown spots, while some of dull purplish-grey, and appearing as if beneath the surface of the shell, are mixed with the other markings, but only at the larger ends of the eggs. Specimen (*a*) is much more heavily marked than specimen (*b*), and the spots are larger. The markings on both eggs are confined chiefly to the larger ends. Measurements in inches: (*a*) 0.71 by 0.49; (*b*) 0.68 by 0.48. In the field this little bird looks almost uniform grey. A fully fledged nestling, shot 24th October, has a tinge of greenish-yellow on the throat, showing an affinity to *Zosterops* in this direction."

Nothing has since been written about it until last year (1921) Mellor again met with it and recorded: "The plate (given in the *Emu*) is somewhat misleading, as there is a certain amount of yellowish tinge about the upper-surface of the birds. This is not in the live bird, there being no 'adornment'

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whatever in its feathers. . . The bird was shot in low bushes in very dry country, and its habits and actions resemble those of an *Acanthiza*. The taking of the bird near Ajana extends the range of the bird a considerable distance westward on the Murchison, and nearer to the coast line."

I recently named the form from Day Dawn as

Lacustroica whitei neglecta.

"Differs from *L. w. whitei* North in being more buff below and darker above."

GENUS—CONOPOPHILA.

CONOPOPHILA Reichenbach, Handb. Spec.

Ornith., Abth. 2 (Handb. Meropinae), p. 119

(Icones ad Synopsin, Cont. No. IX.,

March 1st, 1852), 1852. Type (by sub-

sequent designation Gray, Cat. Gen.

Subgen. Birds, p. 24, 1855) *Entomophila albogularis* Gould.

SMALLEST "Honey-eaters," with short bills, long wings, long square tail and short legs with delicate feet.

The bill is shorter than the head, straight, culmen slightly arched, tip a little decurved; nasal groove long, more than one-third the length of the bill, the nasal aperture as a long linear slit strongly operculate; the culmen somewhat attenuate anteriorly, a little expanded basally; nasal and rictal bristles obsolete, scarcely perceptible; interramal space narrow, feathered, nearly half the length of the mandible.

The wing has the first primary short, a little less than half the length of the second which is about equal to the seventh; the third, fourth and fifth subequal and longest.

The tail is long and square.

The legs are short, the tarsus in front appearing as booted through the fusion of the half dozen scutes which can be clearly seen in the immature; the toes are long and slender, the middle toe and claw a little longer than the hind-toe and claw which is, however, stouter; the outer toe longer than the inner, all the claws delicate.

Key to the Species.

Throat white	..	..	..	..	..	<i>C. albogularis.</i>
Throat reddish-brown	..	..	..	..	..	<i>C. rufogularis.</i>

Order PASSERIFORMES.

No. 655.

Family MELITHREPTIDÆ.

CONOPOPHILA ALBOGULARIS.

RUFOUS-BREASTED HONEY-EATER.

(PLATE 523.)

ENTOMOPHILA (?) ALBOGULARIS Gould, Proc. Zool. Soc. (Lond.) 1842, p. 137, Feb. 1843 :
Port Essington, Northern Territory.

*Entomophila albogularis** Gould, Proc. Zool. Soc. (Lond.) 1842 p. 137, 1843; *id.*,
Birds Austr., pt. XII. (Vol. IV., pl. 51), Sept. 1st, 1843; Ramsay, Proc. Linn. Soc.
N.S.W., Vol. II., p. 190, 1878; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 219,
1884; Ramsay, Proc. Linn. Soc. N.S.W., Ser. 2, Vol. I., p. 1,098, 1887; *id.*, Tab.
List Austr. Birds, p. 13, 1888; Hall, Key Birds Austr., p. 40, 1899; Campbell,
Nests and Eggs Austr. Birds, Vol. I., p. 379, 1901; North, Austr. Mus. Spec. Cat.,
No. 1, Vol. II., p. 86, 1906.

Conopophila albigularis Reichenbach, Handb. Spec. Ornith., Abth. II., p. 119, 1852;
Gould, Handb. Birds Austr., Vol. I., p. 532, 1865; Mathews, Handl. Birds Austral.,
p. 94, 1908; H. L. White, Emu, Vol. XVI., p. 227, 1917 (N.T.); Campbell, *ib.*,
Vol. XVIII., p. 186, 1919.

Certhionyx albogularis Mathews, Nov. Zool., Vol. XVIII., p. 401, 1912.

Certhionyx albogularis yorki Mathews, Austral Avian Record, Vol. I., pt. 2, p. 49,
April 2nd, 1912 : Cape York, Queensland.

Conopophila albogularis albogularis Mathews, List Birds Austr., p. 269, 1913; *id.*, Ibis
1914, p. 128.

Conopophila albogularis yorki Mathews, List Birds Austr., p. 269, 1913; Macgillivray,
Emu, Vol. XVII., p. 205, 1914.

DISTRIBUTION. Northern Territory, North Queensland (New Guinea).

Adult male. Top of head, nape, and sides of face pale slate-grey with dark centres to
the feathers on the crown and nape; back, rump, upper tail-coverts, scapulars,
and upper wing-coverts earth-brown; flight-quills and tail-feathers dark brown
marginied yellow on the outer webs and white on the inner ones; chin and throat
white; fore-neck and sides of neck rust-brown; sides of body pale ochreous-
brown; middle of abdomen, vent, and under tail-coverts white; axillaries and
under wing-coverts buffy-white; under-surface of flight-quills hair-brown with
white edgings; lower aspect of tail similar to its upper-surface but paler. Bill
leaden-brown; basal two-thirds of lower mandible blue-grey; feet and tarsi

* Also spelt *albigularis*.



H. Grönvold. del.

Witherby & Co.

CONOPOPHILA RUFOGULARIS
(RED-THROATED HONEY-EATER)

CONOPOPHILA ALBOGULARIS
(RUFous-BREASTED HONEY-EATER)

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RUFOUS-BREASTED HONEY-EATER.

lead-blue; eyes greyish-brown. Total length 123 mm.; culmen 11, wing 67, tail 45, tarsus 18. Figured. Collected at Cooper's Camp, Apsley Straits, Melville Island, Northern Territory, on the 2nd of October, 1911, and is the type of *C. a. melvillensis*, subsp. nov. It is darker above than those from the mainland and the buff on the chest is not so wide.

Adult female. Similar to the adult male.

Immature. Resemble the adults in general.

Eggs. Two to three eggs form the clutch. A clutch of three eggs taken at the King River, Northern Territory, on the 6th of January, 1916, is of a white ground-colour, finely spotted and speckled nearly all over (particularly at the larger end of each egg) with bright chestnut-red. Ovals in shape; surface of shell smooth, but possessing very little gloss. 18-19 by 13 mm.

Nest. A small cup-shaped structure, composed of fine strips of bark, matted together with spiders' web, lined with fine grass. Dimensions over all: $3\frac{3}{4}$ inches by $2\frac{1}{4}$ inches; egg chamber 2 inches across by $1\frac{3}{4}$ inches deep. Nest suspended by rim from small fork of a tree.

Breeding-months. October to January.

ANOTHER of Gould's new species that Gilbert discovered. Gilbert's notes read: "I first met with it on Mayday Island in Van Diemen's Gulf where it appeared to be tolerably abundant; I afterwards found it to be equally numerous in a large inland mangrove swamp near Point Smith. It is an extremely active little bird, constantly flitting from branch to branch and taking irregular flights during which it utters its pretty song; it also pours forth its agreeable melody for a length of time without intermission while sitting on the topmost branches of the trees. I never observed it in any other than swampy situations, or among the mangroves bordering the deep bays and creeks of the harbours. Its small pensive nest is suspended from the extremity of a weak projecting branch in such a manner that it hangs over the water, the bird always selecting a branch bearing a sufficient number of leaves to protect the entrance from the rays of the sun. . . . During the breeding season it exhibits considerable pugnacity of disposition, and instead of its usual pretty note, utters a chattering and vociferous squeaking. The stomach was very small but tolerably muscular, and its food consisted of insects generally."

Mr. J. P. Rogers wrote me from Melville Island: "Nov. 20, 1911, Cooper's Camp. This species is very rare; all seen were near the foreshore or among the mangroves. Up to Dec. 12 only a few were seen and these all in or close to the mangroves. Jan. 14, 1912. On the north side of the island this species was very numerous, being found along all the watercourses and in the big paper-bark swamp. In fact this and *Gliciphila fasciata* were two of the commonest birds on the north side. This species was apparently just

THE BIRDS OF AUSTRALIA.

mating, but no nests were seen although I watched closely. This is a water-loving species and was never seen far from water on the north side of the island."

McLennan's notes from his King River trip read: "King River, 2/11/15. Single bird seen at spring near camp. 9/11/15. Shot three birds and saw more at spring near camp. Often seen after this date about the salt pans and along edge of mangroves. Roper River. Fairly numerous in places along river and in the mangroves over the river, near Egret rookery. Stomach, insect and termites' remains."

Of the specimens procured Campbell observed: "Have darker flanks than their near ally, *rufogularis*, and have a white throat and brown (buffy) breast mark."

In my "Reference List" no subspecies were included, the only locality being Northern Territory, the species being lumped in *Certhionyx*.

Receipt of specimens from North Queensland enabled me to describe

Certhionyx albogularis yorki.

"Differs from *C. a. albogularis* in being much paler above; the band on the breast lighter; it is also smaller; wing 64 mm. Cape York, North Queensland."

This appeared in my 1913 "List," where they were referred to the correct genus *Conopophila*, and I allowed:

Conopophila albogularis albogularis (Gould).

Northern Territory.

Conopophila albogularis yorki Mathews.

North Queensland.

Although Ogilvie-Grant indicated the sensible differences in the form inhabiting South-west New Guinea as paler brown above with the rufous band across the chest not so rich, he did not name it, so I propose:

Conopophila albogularis mimikæ subsp. nov.

Type from the mouth of the Mimika River,
South-west New Guinea.

It has also a much paler grey head.

Order PASSERIFORMES.

No. 656.

Family MELITHREPTIDÆ.

CONOPOPHILA RUFOGULARIS.

RED-THROATED HONEY-EATER.

(PLATE 523.)

ENTOMOPHILA (?) RUFOGULARIS Gould, Proc. Zool. Soc. (Lond.) 1842, p. 137, Feb. 1843 :
North Coast of Australia=Derby, North-west Australia.

*Entomophila rufogularis** Gould, Proc. Zool. Soc. (Lond.) 1842, p. 137, 1843; *id.*, Birds Austr., pt. XII. (Vol. IV., pl. 52), Sept. 1st, 1843; Ramsay, Proc. Zool. Soc. (Lond.) 1877, p. 350; *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 190, 1878; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 219, 1884; Ramsay, Proc. Linn. Soc. N.S.W., Ser. 2, Vol. I., p. 1,092, 1887; *id.*, Tab. List Austr. Birds, p. 13, 1888; Hall, Key Birds Austr., p. 40, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 378, 1901; Hall, Emu, Vol. I., p. 102, 1902; Le Souëf, *ib.*, Vol. II., p. 91, 1902; North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 85, 1906; Berney, Emu, Vol. VII., p. 81, 1907 (Food). *

Conopophila rufogularis† Reichenbach, Handb. Spec. Ornith., Abth. II., p. 119, 1852; Gould, Handb. Birds Austr., Vol. I., p. 533, 1865; Mathews, Handl. Birds Austral., p. 94, 1908; *id.*, Emu, Vol. IX., pp. 14-62, 1909; Crossman, *ib.*, Vol. X., p. 112, 1910; Hill, *ib.*, p. 286, 1911; *id.*, *ib.*, Vol. XII., p. 259, 1913; Macgillivray, *ib.*, Vol. XIII., p. 178, 1914; Barnard, *ib.*, p. 209; *id.*, *ib.*, Vol. XIV., p. 48, 1914; H. L. White, *ib.*, Vol. XVI., p. 227, 1917; Macgillivray, *ib.*, Vol. XVII., p. 205, 1918.

Certhionyx rufogularis rufogularis Mathews, Nov. Zool., Vol. XVIII., p. 401, Jan. 31st, 1912.

Certhionyx rufogularis queenslandicus Mathews, *ib.*: Inkerman, Queensland.

Certhionyx rufogularis keatsi Mathews, Austral Avian Record, Vol. I., pt. 2, p. 49, April 2nd, 1912: Point Keats, Northern Territory.

Conopophila rufogularis rufogularis Mathews, List Birds Austr., p. 269, 1913; *id.*, South Austr. Orn., Vol. 3, p. 207, 1918.

Conopophila rufogularis queenslandica Mathews, List Birds Austr., p. 269, 1913.

DISTRIBUTION. Northern Tropical Australia from Derby, North-west Australia, to Cape York and Inkerman, Queensland.

* Also spelt *rufigularis*.

† Also spelt *rufogularis*.

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Adult male. General colour of the upper-surface earth-brown, including the head, hind-neck, sides of neck, back, wings, and tail; the margins of the feathers on the top of the head tinged with grey, as are also the sides of the face and fore-neck; flight-quills and tail-feathers dark brown in contrast to the back, rump, and upper tail-coverts; outer margins of flight-quills yellow as are also the tail-feathers but much more narrowly; chin and throat chestnut; middle of breast, middle of abdomen, under tail-coverts, under wing-coverts, and margins of flight-quills below whitish; sides of body and thighs pale fawn-colour; remainder of quill-lining hair-brown; lower aspect of tail greyish-brown. Bill black, feet bright blue-grey, eyes brown. Total length 150 mm.; culmen 11, wing 74, tail 49, tarsus 18. Figured. Collected at Inkerman, Burdekin River, Mid Queensland, on the 19th of October, 1907, and is the type of *C. r. queenslandica*.

Adult female. Similar to the adult male.

Immature female. General colour of the upper-surface earth-brown, somewhat darker on the top of the head, inner webs of flight-quills and tail-feathers; outer margins of flight-quills yellow; under-surface pale grey, including the throat, sides of face, breast, abdomen, under tail-coverts, axillaries, under wing-coverts, and inner margins of flight-quills below, remainder of quill-lining similar to the upper-surface; lower aspect of tail similar to its upper-surface. Bill brown, base of lower mandible grey, feet and tarsi leaden-blue, eyes grey. Total length 113 mm.; culmen 9, wing 67, tail 40, tarsus 17. Figured. Collected at Derby, North-west Australia, on the 8th of January, 1886.

Immature male. General colour of the upper-surface pale earth-brown, including the top of the head, sides of the face, nape, hind-neck, sides of the neck, back, upper tail-coverts, scapulars and upper wing-coverts; flight-quills hair-brown margined with yellow on the outer webs and with whitish on the inner ones; tail-feathers similar but the yellow on the outer webs less conspicuous; chin and throat pale grey intermixed with pale chestnut; sides of breast, middle of abdomen and under tail-coverts buffy-white like the axillaries and under wing-coverts; sides of body inclining to fawn colour; under-surface of flight-quills hair-brown with pale margins; lower aspect of tail similar. Collected at Derby, North-west Australia, on the 24th of November, 1901.

Juvenile. General colour of the upper-surface fawn-brown, including the top of the head, sides of face, hind-neck, sides of neck, entire back, upper tail-coverts, and upper wing-coverts; flight-quills blackish-brown fringed on the outer webs with yellow; tail dark brown; entire under-surface white or buffy-white including the throat, breast, abdomen, under tail-coverts, thighs, and under wing-coverts; under-surface of flight-quills dark brown; lower aspect of tail similar. Collected at Derby, North-west Australia, in 1900.

The following nests are from Parry's Creek:—

11th of December, 1910. Three eggs in clutch. Tree white gum. Height from ground six feet. Nest was hung from a pendant branch and was built of very fine strips of paper-bark, pieces of cocoons, sheep's wool and cobwebs, which are woven into a soft outer nest. The bottom half is lined with very fine stiff stems of grasses and some rootlets which stiffens the nest. This nest is same diameter throughout its length. Dimensions: outside $2\frac{1}{2}$ by $2\frac{1}{2}$ by $5\frac{1}{2}$ inches deep; inside $1\frac{7}{8}$ by $1\frac{7}{8}$ by 4 inches deep.

10th of December, 1910. Three eggs in full clutch. Tree paper-bark. Height from ground six feet. Nest was suspended from a pendant branch and is built of fine strips of paper-bark, pieces of cocoons and cobwebs, the whole being woven together and around the branches from which the nest was hung. Is lined for

RED-THROATED HONEY-EATER.

two-thirds of its height with fine stiff stems of grass which stiffen the nest and keep it in shape. Dimensions: outside $2\frac{1}{4}$ by $1\frac{7}{8}$ by $4\frac{1}{2}$ inches deep; inside $1\frac{1}{8}$ by $1\frac{1}{8}$ by $4\frac{1}{4}$ inches deep.

5th of December, 1910. Three eggs in full clutch were partly incubated. Tree paper-bark. Height from ground eight feet. Nest was suspended from some fine twigs, the outer nest being built with strips of fine soft paper-bark, pieces of silk-like cocoons and cobwebs closely woven together. Was lined for three-quarters of its height with fine stiff stems of grasses. When the outer nest is finished it is soft, limp and shapeless, but after the lining is finished the nest is strong and well shaped; is larger at the bottom than top. Dimensions: outside at top $2\frac{7}{8}$ by $2\frac{7}{8}$ by 4 inches deep; at bottom $2\frac{1}{2}$ by $2\frac{7}{8}$ inches; inside at top $1\frac{1}{8}$ by $1\frac{7}{8}$ by $3\frac{1}{2}$ inches deep; at bottom 2 by 2 inches.

Eggs. Two to three eggs form the clutch. A clutch of three eggs taken at the junction of the Fitzroy and Margaret Rivers, North-west Australia, on the 12th of February, 1897, is of a white ground-colour, marked with small spots and specks of dark reddish-brown or chestnut, and slate-grey, confined mostly to the larger end of each egg. Swollen ovals in shape; surface of shell fine and slightly glossy. The clutch measures 16-18 by 12 mm. A clutch of three eggs taken at Brunnette Downs, Northern Territory, on the 28th of February, 1913, measures A. 16 by 12 mm., C. 15 by 12 mm.

Nest. A small cup-shaped structure, rather deep; composed of soft bark and grass, and woven together with cobwebs; no soft lining inside. Dimensions over all, $2\frac{1}{2}$ inches across by 3 inches deep; inside $1\frac{1}{2}$ inches across by $2\frac{1}{2}$ inches deep. Nest generally suspended from the end of a small leafy branch, and situated from 6 to 20 feet from the ground.

Breeding-months. October to February or March.

"THIS is another of the novelties that has rewarded the researches of the Officers of H.M.S. 'Beagle' on the northern coast of Australia. It is the least of the genus yet discovered, and is nearly allied to *E. albigularis*, from which it may at once be distinguished by the red colouring of its throat. The sexes, judging from the specimens sent me by Bynoe, are very similar in their markings. Nothing whatever is known of its habits and economy."

Thus Gould wrote, and since his time not a great deal has been added.

Mr. J. P. Rogers has written me: "This was one of the commonest Honey-eaters at Maragle Creek but no adults were seen. The birds were also very numerous on the Fitzroy and also on Jegurra Creek but only one was seen at Mungi. This bird is one of the commonest Honey-eaters throughout West Kimberley."

Hall recorded Rogers' notes from Derby, North-west Australia: "The present species is often seen feeding within the long grasses. It chases flies and small beetles, occasionally darting straight into the air and promptly across to its perch," and added "Mr. Rogers writes about seeing one bird with rufous on sides of chest instead of on the throat," and reported that the immature had not the red throat.

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I later added more of Rogers' notes from Parry's Creek, N.W.A.: "Very common; often seen in great numbers at a water-hole and on flowering trees. Feeds largely on insects, which are often taken on the wing, in the same manner as the *Microeca*. Bathes while on the wing; it usually chooses a spot where a bush hangs over the water. The birds fly out a few yards from the bush, flutter their wings in the water, and then fly back and preen their feathers, repeating this many times."

Hill wrote from the Kimberley district, N.W.A.: "The first arrivals appeared on 26th March, and were followed by many others up to 27th April, after which they gradually decreased in numbers, until none remained after 24th May. This species is largely insectivorous, even when honey is abundant."

From Borroloola, Northern Territory, Hill later added: "Very plentiful in the early part of October. Two eggs were taken on 2nd February from a nest built about 35 feet from the ground in a white gum. The bulk of the nest was built of fine pieces of bark, closely woven together. The outside was covered with spider web and the inside lined with rootlets obtained from a nest of *Rhipidura tricolor*."

Macgillivray has written: "Very common in the Gulf country, frequenting the tea-tree, and building in the prickly acacia bushes at a few feet from the ground. Also very common on the box flats at the Sedan camp. . . . Many nests were found here, in various stages of construction or containing eggs or young birds during February and March. One pair was noted feeding a young pallid Cuckoo. The female alone engages in the task of nest building, the male accompanying her to and from the nest. Stomach contents, honey and small insects. A few were noted on the Archer River."

Barnard wrote from the McArthur River, Northern Territory: "Very common birds. They bred freely when the rains fell at the end of 1913 and the beginning of 1914. They were very pugnacious during the breeding season and often attacked each other very savagely."

McLennan's notes on his King River trip read: "Mornington Island, 25/7/15. A few noted. King River, 4/10/15. Two noted coming to water at small water-hole. 31/10/15. A bird shot at the same place. 16/11/15. Three birds seen at spring up river from camp. Stomach, small insects."

As long ago as 1875 Ramsay recorded this species from North Queensland, and in 1886 he added: "I have received this species and also *E. albogularis*, from the Norman River, Port Essington, Port Darwin, and West Australia in general."

No subspecies were however distinguished until 1912, when I named
Certhionyx rufogularis queenslandicus.

RED-THROATED HONEY-EATER.

"Differs from *C. r. rufogularis* in its smaller size, darker coloration on the throat and browner coloration above. Inkerman, Queensland."
and then added

Certhionyx rufogularis keatsi.

"Differs from *C. r. rufogularis* (type from Derby) in its much paler upper-surface. Point Keats, Northern Territory."

In 1913 I transferred the species to the genus *Conopophila* which seems to be correct and, still maintaining Derby as the type locality, synonymised *C. r. keatsi* with the typical form, allowing only

Conopophila rufogularis rufogularis (Gould).

Conopophila rufogularis queenslandica Mathews.

However, there appears to be three (at least) subspecies as above.

GENUS—CERTHIONYX.

CERTHIONYX Lesson, Traite d'Ornith., livr. 4,
p. 306, Sept. 25th, 1830. Type (by
monotypy) *Certhionyx variegatus* Lesson.

Also spelt—

Certhyonyx Bonaparte, Comptes Rendus Acad. Sci. Paris, Vol. XXXVIII., p. 263, 1854.

Melicophila Gould, Birds Austr., pt. xv. (Vol.
IV., pl. 49), June 1st, 1844. Type (by
monotypy) *Melicophila picata* Gould=
Certhionyx variegatus Lesson.

Also spelt—

Melitophila Cabanis, Mus. Heine., Vol. I., p. 116, 1851.

Lichnotentha Cabanis, Mus. Heine., Vol. I., p. 116 (after Oct. 23rd), 1851.
New name for "*Melitophila* Gould" !

Also spelt—

Lithotentha Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 218, 1884.

SMALL "Honey-eaters" with long curved bill, long wings, long square tail, short stout legs and stout small feet.

The bill is somewhat triangular, the tip compressed, regularly expanded basally, culmen well arched, not keeled at the base and rounded anteriorly, tip decurved with posterior notched and roughly serrate edges; nasal slit very long, about one-third the length of the culmen, which exceeds the head in length, the nasal groove indistinct, the long horny operculum ill defined towards flattened culmen ridge; nasal and rictal bristles obsolete; long narrow interramal space, feathered, more than one-third the length of the decurved lower mandible.

The wing has the first primary short, about one-third the length of the second which is long and scarcely shorter than the third and fourth, which are subequal, and longer than the fifth; secondaries long.

The legs are fairly long and stout, the front with six well marked scutes in the immature, apparently booted in the adult; middle toe and claw longer than hind-toe and claw which is stouter, outer toe longer than inner, all claws well curved.

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Il Grönvold del

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CERTHIONYX VARIEGATUS
(PIED HONEY-EATER).

Order PASSERIFORMES.

No. 657.

Family MELITHREPTIDÆ.

CERTHIONYX VARIEGATUS.

PIED HONEY-EATER.

(PLATE 524.)

CERTHIONYX VARIEGATUS Lesson, Traite d'Orn., livr. 4, p. 306, Sept. 25th, 1830 : " Timore " error=Shark's Bay, West Australia.

Certhionyx variegatus Lesson, Traite d'Orn., livr. 4, p. 306, 1830 ; Mathews, Handl. Birds Austral., p. 94, 1908 ; Whitlock, Emu, Vol. IX., p. 210, pl. xxii., 1910 (W.A.) ; Macgillivray, *ib.*, Vol. X., pp. 32-34, 1910 (N.S.W.) ; Mathews, Nov. Zool., Vol. XVIII., p. 401, 1912 ; *id.*, List Birds Austr., p. 270, 1913 ; S. A. White, Emu, Vol. XIV., p. 191, 1915 (Central Australia) ; *id.*, *ib.*, Vol. XV., p. 161, 1916 (S.A.).

Certhia leucomelas "Cuv." Lesson, Traite d'Orn., livr. 4, p. 306, Sept. 25th, 1830, as synonym of *C. variegatus*.

Melicophila picata Gould, Birds Austr., pt. xv. (Vol. IV., pl. 49), June 1st, 1844 : Perth district, West Australia.

Entomophila picata Gray, Genera Birds, Vol. I., p. 118, 1846.

Lichnotentha picata Cabanis, Mus. Heine., Vol. I., p. 116, 1851 ; Gould, Handb. Birds Austr., Vol. I., p. 529, 1865.

Certhyonyx leucomelas Bonaparte, Comptes Rendus Acad. Sci. (Paris), Vol. XXXVIII., p. 263, 1854 ; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 190, 1878 ; *id.*, Tab. List Austr. Birds, p. 13, 1888.

Entomophila leucomelas Gray, Handl. Gen. Sp. Birds, Vol. I., p. 154, 1869 ; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 220, 1884 ; Hall, Key Birds Austr., p. 40, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 380, 1901 ; Hall, Emu, Vol. I., p. 102, 1902 ; Le Souëf, *ib.*, Vol. II., p. 147, 1903 ; Carter, *ib.*, Vol. III., p. 92, 1903.

Certhionyx occidentalis Grant, Ibis, 1909, p. 658, Oct. No. (received B.M., Nov. 27th) : Carnarvon, West Australia ; Campbell, Emu, Vol. X., p. 299, 1911 (Eggs).

Certhionyx variegatus neglecta Mathews, Austral Avian Record, Vol. III., pt. 3, p. 62, April 7th, 1916 : New South Wales.

DISTRIBUTION. Across Southern Central Australia from New South Wales to West Australia, commoner in the West.

Adult male. General colour of the upper- and under-surface black and white. Entire top of head, throat and neck all round black, like the sides of the breast, back,

THE BIRDS OF AUSTRALIA.

scapulars, innermost secondaries, and middle tail-feathers ; inner upper wing-coverts, margins of inner secondary flight-quills, upper tail-coverts, and greater portion of the lateral tail-feathers white like the breast, abdomen, sides of body, thighs, and under tail-coverts ; outer upper wing-coverts, outer flight-quills, and tips of lateral tail-feathers blackish-brown ; axillaries and under wing-coverts black ; under-surface of flight-quills dark hair-brown ; lower aspect of tail similar to its upper-surface but the dark portion somewhat paler. Bill black, with blue-grey base, legs and feet black ; eyes brown ; a blue-grey wattle on lower eye-lid. Total length 190 mm. ; culmen 18, wing 91, tail 70, tarsus 22. Figured. Collected at Day Dawn, Mid-west Australia, on the 10th of July, 1903.

Adult female. General colour of the upper-surface bistre-brown, including the top of the head, sides of face, hind-neck, sides of neck, scapulars, rump, and upper tail-coverts, with dark shaft-streaks on the crown of the head and back ; upper wing-coverts margined white or buffy-white ; flight-quills dark brown margined with pale buff on the outer webs of the innermost secondaries ; tail also dark brown slightly paler on the edges of the feathers ; a slight indication of a pale superciliary-streak ; throat, abdomen, flanks, and under tail-coverts white, with dark shaft-streaks to many of the feathers ; breast pale fawn-colour with dark shaft-streaks ; axillaries and under wing-coverts dusky-brown ; under-surface of flight-quills greyish-brown ; lower aspect of tail similar. Bill horn-colour, legs and feet lead-colour, eyes hazel. Total length 180 mm. ; culmen 16, wing 86, tail 65, tarsus 21. Figured. Collected at Point Cloats, Mid-west Australia.

Immature birds are in general rather like the female.

Immature male. General colour of the upper-surface rust-brown with dark centres to the feathers and black feathers interspersed—including the top of the head, entire back, wings, and tail ; lesser, median, and some of the greater upper wing-coverts cream-white ; outer primary flight-quills and some of the secondaries pale brown, remainder of primary and secondary-quills blackish-brown ; middle tail-feathers also blackish-brown, the outer ones pale brown ; upper tail-coverts whitish-buff with dark shaft-lines to some of the feathers ; under-surface of body whitish-buff including the breast, abdomen, sides of body, vent, and under tail-coverts ; chin and throat similar but paler and intermixed with black ; under wing-coverts blackish ; axillaries and under-surface of flight-quills pale brown ; lower aspect of tail similar. Eyes hazel. Bill fleshy with purple tip. Legs and feet blue-grey. Collected at Point Cloates on the 2nd of May, 1900.

Immature female. General colour of the upper-surface dark brown with pale edges to the feathers, including the top of the head, back, wings, and tail ; flight-quills uniform dark brown becoming darker on the inner secondaries ; tail dark brown ; chin and throat greyish-brown ; fore-neck and breast dark ochreous with blackish-brown spots to the feathers ; abdomen and sides of body white tinged with dark ochreous and dark shaft-lines to some of the feathers ; thighs dusky ; under tail-coverts buff with dark narrow shaft-lines ; axillaries, under wing-coverts, and quill-lining dusky-brown ; lower aspect of tail similar but darker. Eyes red-brown, lower eyelid slate-grey ; feet very dark grey, bill dark horn, lower mandible pale bluish-horn. Collected at Borewell, East Murchison, on the 29th of August, 1909.

Immature female. General colour of the upper-surface earth-brown, including the top of the head, sides of face, hind-neck, sides of neck, entire back ; upper tail-coverts paler and inclining to rust-brown ; upper wing-coverts similar to the back with pale margins to the feathers ; flight-quills uniform pale brown, except some of the inner secondaries which have pale margins on the outer webs ; tail similar but darker ; chin and throat dusky-grey ; fore-neck ochreous and spotted with

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dark brown; breast, abdomen, and sides of body silky-white; thighs and under tail-coverts buffy-white with dark shaft-lines on the latter; axillaries and under wing-coverts dusky-brown; under-surface of flight-quills pale brown; lower aspect of tail similar to its upper-surface. Collected at Kalgoorlie, West Australia, on the 27th of November, 1898.

Eggs. Two to three eggs usually form the clutch. A clutch of three eggs taken at Borewell, East Murchison, Western Australia, on the 6th of September, 1909, is of a pale yellowish-white, well marked all over with spots and specks of dark umber and dull slaty-grey, and more closely resemble the eggs of the common Wood-Swallow (*Artamus sordidus*) than those of a Honey-eater. Swollen ovals in shape; surface of shell fine, and slightly glossy. 21-23 by 15 mm.

Nest. A shallow cup-shaped structure, composed of fine grasses, and lined with finer grasses. Dimensions over all, 4 inches; egg cavity inside nearly 2 inches across. Placed in a small bush or tree, at heights varying from 5 to 15 feet or more.

Breeding-months. October to February, June and July.

GOULD introduced a new genus and species for this form writing: "It possesses many singular habits, and differs from most other species of the *Meliphagidæ* in the totally different colouring of the sexes." He did not state that he met with it himself, but wrote: "The actions of this bird when on the wing are extremely varied, and some of them very graceful; it frequently ascends in a perpendicular direction to a considerable height above the trees, when the contrast presented by its black and white plumage renders it a conspicuous and pleasing object. It is at all times exceedingly shy, and invariably perches on the top of an isolated bush or dead branch. It usually utters a peculiar plaintive note, slowly repeated several times in succession; it also emits a single note, which so closely resembles that of the *Myzomela nigra*, as to be easily mistaken for it. It is at all times extremely difficult of approach, and the female is even more shy and wary than the male. Gilbert states that this species assembles in vast flocks, which continue soaring about during the greater portion of the day. It is a periodical visitant to Western Australia, where it arrives in the latter part of October. It also inhabits the plains around Adelaide in the neighbouring colony."

This last sentence is interesting in view of later events.

Mr. Tom Carter has written me: "In your 'Reference List,' 1912, the range is given as being West Australia generally. I have never seen any of these birds in the south-west, nor about Broome Hill, and I do not think they occur in big timber country. The above remark also refers to the Gascoyne district. About Point Cloates and the North-west Cape, this species was one of the commonest and most conspicuous birds in the winter months, *after rain*. Few were seen in dry seasons. The male birds have a habit of perching on the top twigs of a high bush, and are restless and wary. They continually keep soaring up in the air, and while descending to their

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perch, utter a mournful sort of whistling song. The nests are somewhat broad and shallow, mostly made of dry grass. The clutch of eggs is usually three. The nests are built from three to five feet above ground in bushes. July 4, 1898, 3 eggs. July 14, 1899, 2 eggs. July 21, 1901, 2 nests each with 3 eggs. July 28, 1901, 2 nests each three eggs and one with young birds. July 27, 1901, 1 egg. Sept. 1, 1913. Recently fledged young. The female bird, when a nest containing young is approached, flutters close round one feigning lameness. June 23-25, 1902. Hundreds of these birds were flying in flocks against a strong N.E. wind about 30 miles south of North-west Cape, 45 miles across to mainland. Query, which way did they go on reaching the Cape ? ”

Mr. J. P. Rogers has sent me a short note : “ On Jegurra Creek, 45 miles south of the Fitzroy River, I saw two small flocks of these birds, travelling east, flying from tree to tree. I think this species only occasionally visits the Fitzroy River as I only saw them at long intervals and never common.”

Captain S. A. White has written : “ This bird is only found in the interior of this State, South Australia. The writer met with it at Moorily-anna Native Well in the north-west of this State. It was seen hopping on the ground round a mulga bush, then climbed up the stem after the manner of a parrot till it was two feet or more from the ground, when it hung head downwards for a minute or so, then it let go and dropped to the ground, hopped round the bush again and then repeated the performance. I also met with it on the Strzelecki Creek in 1916.”

Whitlock wrote from the East Murchison, West Australia : “ A few pairs around Lake Violet, but more common on the big spinifex plain west of Bore Well. They arrived during the last week in July and early part of August. Parties were still travelling throughout the latter month. At Bore Well they fed, in company with the Wood-Swallows, on the curious ground-flowering plant, *Brachysema daviesioides*, and the fore-heads and crowns of several I shot were so thickly coated with pollen that I had to scrape it off with a knife. In the early part of September they were breeding amongst the scrub on the spinifex plains. The favourite nesting site was in the branches of the handsome red-flowered *Hakea multilineata*, with its oleander-like growth. On the East Murchison this shrub attains a height of 15 or 20 feet, and to reach one or two of these Honey-eaters' nests I had to climb the lower branches. The nests were very substantial. Outwardly they were made of dried spinifex and other grass stems, the cup being wonderfully neat and lined with similar but finer material. In the ten clutches of eggs I found, not much variation in type is apparent. One pair was pyriform, and these reminded me irresistibly of miniature eggs of the European

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Marsh-Sandpiper (*Totanus stagnatilis*). The latter bird is an accidental visitor to Australia. During the breeding-season the female is not much in evidence, but the male careers around in his erratic flight, tossing himself vertically in the air and in his descent uttering his piercing, but monotonous and long drawn cry of 'Tē-tītēē-tēē-tēē.' "

Macgillivray, writing about the region of the Barrier Range, New South Wales, observed: "The Pied Honey-eater (*Certhionyx variegatus*) was noted here, feeding in the blossoming box and lignum, but occasionally flying out to the surrounding sand-ridges to visit the flowering turpentine and honey-suckle trees (*Eremophila longifolia*). This Honey-eater is very shy, and we had great difficulty in getting near enough to procure specimens. It is also very quick on the wing. It flies, singing, into the air from the top of a tree, and suddenly drops, always turning over backward in its descent."

Captain S. A. White, recording the results of an Expedition to the Musgrave and Everard Ranges, wrote: "Rare; a few birds seen amongst the granite outcrops," and later from the northern end of the Flinders Ranges: "A small party of these birds was seen in the ranges feeding in the *Eremophila* bushes. An adult male and two immature birds were secured; the latter had the whole of the under-surface creamy-white, thickly spotted with blackish-brown spots. They were a pair and the male could be easily picked out owing to the stronger markings. The erratic movements of this bird were very pronounced; this I had already noticed in the north-west of Australia."

Connected with the technical history of this species are several blunders. First it was described as a new genus and species by Lesson from a specimen procured by Peron and Lesueur and labelled as coming from Timor. It had been labelled but not described as a new species by Cuvier. The specimen was apparently obtained at Shark's Bay, West Australia, where this species is sometimes common, and it does not occur at Timor. Then Gilbert met with it in the Perth district and Gould, ignorant of the specimens in the Paris Museum, again described it as a new genus and species. Cabanis then proclaimed Gould's genus name to be preoccupied and proposed a new one. However, Bonaparte recognised that the bird in the Paris Museum was the same and suggested the retention of Cuvier's MS. specific name and Lesson's generic name.

For some inexplicable reason Gray, accepting this, subordinated Lesson's name as a subgenus of Gould's *Entomophila* which had priority, and, of course, Gadow continued the blunder in the *Cat. Birds Brit. Museum*, and this was followed by Australian ornithologists who had not access to original literature, although Ramsay had correctly used the genus name *Certhionyx*.

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In my "Handlist" I revived the correct combination *Certhionyx variegatus* Lesson.

The blundering was not yet complete as Grant, receiving birds from West Australia, compared them with birds incorrectly localised as from South Australia, detected differences which do not exist and named the western bird as a new species of *Certhionyx*, although the type of *Certhionyx* must have come from the same locality as his new species. Even if it were suggested that it did not, Gould's bird certainly did. Nevertheless, upon this new species being published I added it in a list, and immediately its eggs were described!

I corrected the error and at that time had seen no eastern birds though Gould indicated their existence. Macgillivray, however, found it in the interior of New South Wales, and since then Captain S. A. White has found it throughout the interior.

I recently named the New South Wales bird as

Certhionyx variegatus neglecta.

"Differs from *C. v. variegatus* (Lesson) in being smaller and paler."

GENUS—ZANTHOMIZA.

ZANTHOMIZA Swainson, Classif. of Birds, Vol. II.,
p. 326, July 1st, 1837. Type (by monotypy).. *Merops pyhrygius* Shaw.

Also spelt—

Xanthomyza Strickland, Annals Mag. Nat. Hist., Vol. VI., p. 419, 1841.

Zanthomyza Gould, Birds Austr., pt. XII. (Vol. IV., pl. 48), Sept. 1st, 1843.

Meliphaga Gray, List Genera Birds, 2nd ed., p. 20, Sept. 1841, and of recent authorities.

LARGER "Honey-Eaters" with short stout curved bills and bare pustulose skin around eyes, long wing, long fan-shaped tail and short legs and small feet.

The bill is shorter than the head, stout, compressed laterally, the culmen keeled basally, anteriorly round, tip a little decurved and posteriorly slightly notched; the nasal groove is long, nearly half the length of the bill from frontal feathering, which encroaches a little on the nasal groove; large horny operculum nearly obscuring the linear nostril slit; nasal bristles prominent, rictal bristles present but obscure; lower mandible straight with no marked gonys, the long interramal space, feathered, nearly half the length of the mandible. The wing has the first primary short, less than half the length of the second and less than one-third the length of the third, which is about equal to the sixth, the fourth and fifth subequal and a little longer, the second equal to the seventh and longer than the secondaries. The tail is fan-shaped, of twelve feathers with rather pointed tips. The legs are short; in front obscurely scutellate, almost booted, although eight scutes are clearly seen in immature; posteriorly bilaminate; the toes are slender, hind-toe stouter, the hind-toe and claw about equal to middle-toe and claw, outer toe longer than inner, inner toe and claw about equal to middle toe alone, claws slender.

Order PASSERIFORMES.

No. 658.

Family MELITHREPTIDÆ.

ZANTHOMIZA PHRYGIA.

REGENT HONEY-EATER.

(PLATE 525.)

MEROPS PHRYGIUS Shaw, Zool. New Holland, p. 13, pl. iv., pt. iv., 1794: New South Wales.

Merops phrygius Shaw, Zool. Mus. Holland, p. 13, pt. iv., 1794; Latham, Index Ornith. Suppl., p. xxxiv., 1801.

Black and Yellow Bee-eater Latham, Gen. Synops. Birds, Suppl. II., p. 154, 1801.

Meliphaga phrygia Lewin, Birds New Holland, pl. 14, 1808; Gould, Handb. Birds Austr., Vol. I., p. 527, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 189, 1878; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 221, 1884; Ramsay, Tab. List Austr. Birds, p. 13, 1888; Hall, Key Birds Austr., p. 41, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 381, 1901; A. G. Campbell, Emu, Vol. II., p. 14, 1902 (Vic.); Batey, *ib.*, Vol. VII., p. 9, 1907 (Vic.); North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 154, 1907; Hill, Emu, Vol. VII., p. 18, 1907 (Vic.); Austin, *ib.*, pp. 30-91 (N.S.W.); Mathews, Handl. Birds Austral., p. 95, 1908; H. L. White, Emu, Vol. IX., p. 93, 1909 (N.S.W.); Cleland, *ib.*, p. 224, 1910 (Food); Austin, *ib.*, Vol. XII., p. 42, 1912 (N.S.W.); Stone, *ib.*, p. 116 (Vic.).

Turdus squameus Vieillot, Nouv. Dict. d'Hist. Nat., nouv. ed., Vol. XX., p. 259, May 30th, 1818: New South Wales.

Philemon phrygius Vieillot, Nouv. Dict. d'Hist. Nat., nouv. ed., Vol. XXVII., p. 428, 1818.

Anthochaera phrygia Vigors and Horsfield, Trans. Linn. Soc. (Lond.), Vol. XV., p. 322, 1827.

Zanthomiza phrygia Swainson, Classif. Birds, Vol. II., p. 326, 1837; Gould, Birds Austr., pt. xii. (Vol. IV., pl. 48), Sept. 1st, 1843.

Turdus squamatus "Vieill." Bonaparte, Consp. Gen. Av., Vol. I., p. 391, "1850" (before Feb. 1851), error for "*T. squameus*."

Meliphaga phrygia phrygia Mathews, Nov. Zool., Vol. XVIII., p. 401, 1912.

Meliphaga phrygia tregellasi Mathews, *ib.*, p. 402, Jan. 31st, 1912: (Mulgrave) Victoria; *id.*, Austral Av. Rec., Vol. I., p. 61, 1912.

Zanthomiza phrygia phrygia Mathews, List Birds Austr., p. 270, 1913; Belcher, Birds Geelong, p. 335, 1914.

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ZANTHOMIZA PHRYGIA
(*REGENT HONEY-EATER*)

H. Grönvold del.

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REGENT HONEY-EATER.

Zanthomiza phrygia tregellasi Mathews, List Birds Austr., p. 270, 1913; Ashby, Emu, Vol. XVI., p. 194, 1917 (S.A.).

DISTRIBUTION. New South Wales, Victoria, South Australia.

Adult male. General colour, both on the upper- and under-surface, black with white or yellow margins to the feathers; top of head, chin, throat, and neck all round black; eye-region bare; mantle and upper back black margined with yellowish-white; lower back and rump for the most part whitish with black centres to the feathers; upper tail-coverts black, margined with yellowish-white; lesser and median upper wing-coverts slightly fringed with yellowish-white like the bastard-wing; the greater series and primary-coverts extensively tipped with yellow, the first primary slightly marked with yellow on the outer web, the second, third, fourth, and fifth marked with yellow on both webs of the subterminal portion, the sixth, seventh, and eighth only very slightly marked with white on the outer webs at the tip, the remainder of the flight-quills broadly margined with yellow on the outer webs and tips of the terminal portion; tail—the middle feathers black tipped with yellow and the lateral ones yellow with black bases; breast, abdomen, and sides of body marked with black and white; under tail-coverts pale yellow with dark lanceolate markings at the base; axillaries and under wing-coverts yellow, intermixed with dark brown on the latter; under-surface of flight-quills dark brown marked with yellow and white; lower aspect of tail dark brown and yellow; eyes brown, bill—upper mandible black, lower brown. Skin round eye yellowish. Total length 223 mm.; culmen 19, wing 118, tail 90, tarsus 22. Figured. Collected at Mulgrave, Victoria, on the 3rd of December, 1908, and is the type of *M. p. tregellasi*.

Immature female. Top of head, lores, and nape dark dusky-brown becoming somewhat paler on the hind-neck and upper back, some of the feathers on the latter blackish margined with yellowish-white; lower back, rump and upper tail-coverts pale smoke-brown with whitish margins to the last; scapulars similar to the lower back; lesser upper wing-coverts dusky-brown; the greater series, bastard-wing, primary-coverts, and flight-quills blackish-brown margined with yellow, some of the outer primaries have a space of yellow on the inner webs of the subapical portion; base of tail and middle feathers blackish-brown, the outer feathers for the greater portion yellow with a dark shaft-streak which becomes obsolete towards the tip; chin, upper throat, and sides of neck blackish; a small spot of lemon-yellow behind the ear-coverts; lower throat and fore-neck bronze-brown; breast, abdomen, sides of body, and under tail-coverts whitish tinged with yellow; axillaries and under wing-coverts similar; under-surface of flight-quills dark brown and yellow; lower aspect of tail for the most part yellow with dark brown at the base and on the middle feathers. Collected in Victoria on the 17th of February, 1909.

Female (juvenile). Top of head, nape, lores, and ear-coverts black; back and scapulars blackish-brown with pale margins and whitish shaft-lines to some of the feathers; upper tail-coverts smoke-brown; wings blackish with sulphur-yellow margins to the feathers—more broadly on the secondary quills; middle tail-feathers blackish-brown, the lateral ones pale sulphur-yellow; chin and throat dusky-brown; fore-neck, breast, and sides of body smoke-brown with white shaft-streaks; abdomen and under tail-coverts yellowish-white like the marginal under wing-coverts; quill-lining dark brown; thighs dusky; lower aspect of tail for the most part sulphur-yellow. Bill brown, gape yellow, eyes brown, bare skin light brown, feet greyish-brown. Figured. Collected at Bayswater, Victoria, on the 26th of December, 1908.

Eggs. Two to three eggs generally form the clutch. A clutch of two eggs taken at Belltroes, Upper Hunter River, New South Wales, on the 12th of October, 1907, is

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of a beautiful rich reddish-buff, becoming darker at the larger end, spotted and speckled (particularly at the larger end) with reddish and purplish-brown. Swollen ovals in shape, surface of shell fine and slightly glossy. 23-24 by 17-18 mm.

Nest. A cup-shaped and rather round structure; composed of strips of stringy bark, lined with thistle-down and other soft material, and usually placed in the upright or horizontal fork of a tree, and frequently where young growth is sprouting out, and thus affording a good support. Dimensions over all, 4 to nearly 5 inches across, by 2 inches deep, and inside egg cavity $2\frac{1}{2}$ inches across by over an inch deep.

Breeding-months. August to January.

THIS beautiful bird was described by Latham in his *General Synops. of Birds* as the Black and Yellow Bee-eater, "from the drawings of Mr. Lambert." When he drew up his Latin rendering in the Supplement II. to the *General Synopsis of Birds* he called it *Merops phrygius* and referred also to "*New Holland Birds*, pl. ."

In that place *Merops phrygius* was given by Shaw to this bird, which he called the Embroidered Merops, and the part of the publication in which the plate appeared was called *Zoology of New Holland* and had appeared in 1794.

It was one of the few birds in Lewin's rare work where he had called it the Warty-faced Honey-eater and the same Latin name was used, apparently being written in in England, but the genus name *Meliphaga* was here introduced.

Gould's notes read "This is not only one of the handsomest of the Honey-eaters, but is also one of the most beautiful birds inhabiting Australia, the strongly contrasted tints of its black and yellow plumage rendering it a most conspicuous and pleasing object, particularly during flight. It is a stationary species, and enjoys a range extending from South Australia to New South Wales; I also met with it in the interior nearly as far north as the latitude of Moreton Bay. Although it is very generally distributed, its presence appears to be dependent upon the state of the *Eucalypti*, upon whose blossoms it mainly depends for subsistence; it is consequently only to be found in any particular locality during the season that those trees are in blossom. It generally resorts to the loftiest and most fully-flowered tree, where it frequently reigns supreme, buffeting and driving every other bird away from its immediate neighbourhood; it is, in fact, the most pugnacious bird I ever saw, evincing particular hostility to the smaller *Meliphagidæ*, and even to others of its own species that may venture to approach the trees upon which two or three have taken their station. While at Adelaide, in South Australia, I observed two pairs that had possessed themselves of one of the high trees that had been left standing in the middle of the city, which tree, during the whole period of my stay, they kept sole possession of, sallying forth and beating off every bird

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that came near. I met with it in great abundance among the brushes of New South Wales, and also found it breeding in the low apple-tree flats of the Upper Hunter. I have occasionally seen flocks of from fifty to a hundred in number, passing from tree to tree as if engaged in a partial migration from one part of the country to another, or in search of a more abundant supply of food. The stomachs of the specimens I killed and dissected on the Hunter were entirely filled with liquid honey ; insects, however, doubtless form a considerable portion of their diet."

Mr. Thos. P. Austin has written me from Cobbora, New South Wales : "Being a nomadic species, it is sometimes absent for years, then suddenly, towards the end of the winter, it appears in great numbers, but they are very local in their habits, dozens of birds may be seen in the trees within a few acres, then one might travel some miles before seeing any more, when another gathering of them will be found. Then again in other years just a few pairs may be seen. One year here, after they had been very numerous all through the spring and summer, a fair number of the birds stayed during the winter. Once they put in an appearance here they stay to breed. It is most pugnacious, fiercely attacking one another, in fact other species also, especially during the breeding season ; if any other bird comes near the nesting site, it is after it at once. Locally, one of their favourite haunts is a clump of white box trees just outside my garden and orchard, but I have never known them to come within. Their song is a loud double almost ringing metallic sound, when uttered it is often accompanied by a bobbing motion of the head, but sometimes the head is only stretched forward. Their nest is more like that of a Fantail, or Flycatcher, than the usual type of most Honey-eaters, and is usually placed on a rather thick limb with rough bark, either horizontal or perpendicular, but I have seen them in a great variety of situations. I have taken their eggs from the first week in October till the middle of December. The clutch is usually two in number, but often three."

Captain S. A. White has written me : "This beautiful Honey-eater is fairly plentiful in the Mount Lofty Ranges at times and often visits the southern end of the Range in the autumn when they congregate in numbers in the flowering gum-trees. They become very noisy and pugnacious, chasing all the birds both large and small away from their feeding trees. These birds nest in the Mount Lofty Ranges in September and October."

Mr. J. W. Mellor also writes "This gay Honey-eater is by no means plentiful in South Australia, but at times is seen in the Mount Lofty Ranges amongst the hills clad in eucalypts and thickly bushed beneath with tall undergrowth. In Victoria and New South Wales it is also thinly distributed in the thickly brushed country."

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Mr. F. E. Howe has written me : " During the spring and summer months this form was plentiful at Bayswater, and on Dec. 5th Mr. T. H. Tregellas found a nest with one egg and one of the Pallid Cuckoo. This nest was found building on Nov. 24th. Messrs. Tregellas and Chandler inform me that they were often noticed in flocks of about twenty, spending most of their time in the tree tops or chasing one another with much bill-snapping. A young female about three weeks old was secured. It was slightly more than half the size of the adult and the warts were not yet visible on the face. The gizzard contained small insects and beetles. I first knew this species at Stawell when a boy and our name then for it was 'Clung,' as that word sounded something like one of its notes. I have since met with it at Stawell, Parwon and Whittlesea, all in Victoria."

Mr. A. G. Campbell also wrote : " About the month of September appears in all the gold-bearing hills of Central and Western Victoria to nest. In dry years it sometimes approaches nearer Melbourne, and birds have nested at Somerville on the Mornington Peninsula."

Messrs. Tregellas and Chandler later sent me fuller accounts of the incidents forwarded first by Mr. Howe, but with no additional matter of interest, so they need not be cited, though I have to thank them for their notes.

G. F. Hill wrote regarding the Ararat district of Victoria : " In 1906 these birds arrived in flocks on 18th October, flying from the south, and eggs were taken on 25th and 30th November. Their arrival was later than usual, eggs being taken as early as 2nd October in previous years. The nests were built of rough pieces of stringy bark (eucalypt) and grass, lined with fine bark, grass, and sheep's wool. They are invariably placed in the forks of stringy barks about 25 feet from the ground. Three eggs are generally laid."

H. L. White wrote from Belltrees, New South Wales, 28th August, 1909 : " During the late winter Warty-faced Honey-eaters have been unusually plentiful in the locality ; ever since March last they have been with us in thousands. While riding through the bush one hears their peculiar notes all day long. I have never previously known the white box (*Eucalyptus hemiphloia*) to flower so freely ; this probably accounts for the presence of Honey-eaters in such numbers. Leatherheads or Friar Birds have also remained with us during the whole winter. The Warty-faced Honey-eaters are now breeding, the first nest (with eggs) being observed on the 16th August ; it was built in a heap of rubbish left by a flood in the bed of the Hunter River. Several other nests have since been seen in *Casuarina* trees growing on the river banks."

When I prepared my "Reference List" in 1912 I separated as a subspecies
Meliphaga phrygia tregellasi.

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"Differs from *M. p. phrygia* in being much blacker above. (Mulgrave) Victoria."
Victoria and South Australia.

One comment at the time was how a migratory bird could show subspecific differences. It is obviously not a migratory bird in one sense, as it only occurs in the restricted south-eastern part of Australia, so apparently only moves short distances, and it does show marked differences as far as present material goes; hence I still admitted in 1913 and at present recognise two races. It would be of value if the movements of this very peculiar bird were defined.

GENUS—GLYCICHÆRA.

GLYCICHÆRA Salvadori, Annal. Mus. Civ. Genova, Vol.
 XII., p. 335, June 4th, 1878. Type (by original
 designation) *G. fallax* Salvadori.
Macgillivrayornis Mathews, South Austr. Ornithologist,
 Vol. I., pt. II., p. 12, April 1st, 1914. Type (by
 original designation) *M. claudi* Mathews.

WHEN I proposed the genus *Macgillivrayornis* I compared it with all the Australian Honey-eaters from which it obviously generically differed. I wrote the diagnosis thus: "Bill equal to the head in length. First primary half the length of second, which is two-thirds the length of the third; fourth, fifth, and sixth equal and longest."

The bill is short, about equal to the head in length, straight, the culmen a little arched, the tip slightly decurved with a faint posterior notch; the nasal groove long but less than half the length of the bill, the nostrils linear slits; nasal bristles few and small, rectal bristles scant and scarcely noticeable. The wing is rounded, formula as above, the secondaries long, exceeding in length the second primary.

The tail is square in shape and comparatively short.

The legs are weak and the feet small; the tarsal covering appears booted in adult, but sometimes scutes are obsoletely noted, and these are marked in the young; the toes are delicate, the claws short; the outer and inner toes are subequal, and about equal to the middle toe alone, and the middle toe and claw are longer than the hind-toe and claw.

The noticeable features of this genus are the long fluffy feathers of the back and the long feathers on the thighs.

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GLYCHIDICHAERA CLAUDI
(GREEN HONEY-EATER.)

Order PASSERIFORMES.

No. 659.

Family MELITHREPTIDÆ.

GLYCICHÆRA CLAUDI.

PUFF-BACKED HONEY-EATER.

(PLATE 526.)

MACGILLIVRAYORNIS CLAUDI Mathews, South Austr. Ornithologist, Vol. I., pt. II., p. 12, April 1st, 1914: Claudie River, North Queensland.

Macgillivrayornis claudi Mathews, South Austr. Ornithologist, Vol. I., pt. II., p. 12, April 1st, 1914; Macgillivray, Emu, Vol. XV., p. 77, pl. XII., 1915; *id.*, *ib.*, Vol. XVII., p. 204, 1918.

*Glycichæra** *claudi* Mathews and Iredale, Austral Avian Record, Vol. IV., pts. 4 and 5, p. 103, Dec. 16th, 1920.

DISTRIBUTION. North Queensland (Claudie River district only).

Adult female. General colour of the upper-surface olive-green, including the top of the head, sides of face, sides of neck, hind-neck, entire back, upper tail-coverts, scapulars, and upper wing-coverts; bastard-wing, greater wing-coverts, and flight-quills dark brown fringed with olive-green, the last margined with white on the inner webs; tail pale brown: chin and throat greyish-white; fore-neck and breast pale yellow; abdomen, flanks, thighs, and under tail-coverts bright yellow; axillaries and under wing-coverts whitish tinged with yellow; under-surface of flight-quills dark brown with whitish on the margins; lower aspect of tail similar to its upper-surface but the shafts of the feathers are white. Eyes brown; bill, upper dark brown, lower light horn, feet slate. Total length 115 mm.; culmen 13, wing 57, tail 40, tarsus 18. Figured. Collected on the Claudie River, North Queensland, on the 20th of December, 1913, and is the type of the above.

The sexes are alike.

Nest and eggs not described.

THE only note of this very recent addition to the Australian Avifauna is that by the collector, Dr. Macgillivray, who wrote: "On the day following our arrival at camp on the Claudie, Mr. McLennan and I came across this species in the scrub. It was Mr. McLennan's keen ear for bird-notes that first detected one that was strange to him and led to his finding the birds feeding high up in the scrub, where their small size and subdued colouring made it no easy matter to make out what they were. We, however, soon had two of them in our hands, and immediately saw that they were new and

* Also spelt *Glycichæra*.

THE BIRDS OF AUSTRALIA.

quite unlike any other genus of Honey-eaters. We afterwards found them to be fairly common in the scrub, but always high up in the leaves, where only the trained eye of one accustomed to look for such things can be expected to find them." "So far it is known to inhabit only the tropical scrubs bordering the Claudie River, which empties itself into Lloyd's Bay, on the eastern side of the Cape York Peninsula."

It is of great importance to note that this bird does not occur at Cape York proper, but only in the Claudie River district. And it has representatives in New Guinea and the Aru Islands, which also puzzled ornithologists as to its relations.

ADDITIONS.

The following additions should be considered on the pages mentioned :—

Entomyzon cyanotis. BLUE-FACED HONEY-EATER, to be added to p. 289.

Nearly adult male. Top of head, sides of face, and sides of neck dusky brown tinged with grey; mantle uniform dark smoke-brown; back, wings, and tail-feathers yellowish-green with pale tips to the last; bastard-wing and inner webs of flight-quills dark brown with buff margins on the basal portion; a short line of white on the sides of the occiput; a moustacial streak of white which extends to the sides of the neck; chin, throat, fore-neck, and middle of breast dusky with a greyish tinge; sides of breast, abdomen, sides of body, thighs, and under tail-coverts buffy-white; axillaries and under wing-coverts dusky brown; under-surface of flight-quills dark brown with buff margins towards the base; lower aspect of tail similar to its upper-surface but paler. Eyes smoky-white, feet neutral, bill greenish-yellow base, tip black. Skin round eye greenish-yellow, mouth black, edged with yellow. Tongue grey, tipped with whitish-horn.

Immature male. Top of head and sides of face glossy blackish-brown with a broad line of white on each side of the occiput; hind-neck and sides of neck dark smoke-brown followed by an irregular band of black on the mantle; back, wings, and tail bright yellowish-green; lesser marginal upper wing-coverts blackish-brown; bastard-wing similar but paler; inner webs of flight-quills dark brown margined with buff towards the base; upper tail-coverts and tail-feathers paler than the back with pale margins at the tips of the latter; chin, throat, fore-neck and upper breast greyish-black; a white moustacial streak which extends to the sides of the neck; breast, abdomen, sides of body, thighs, and under tail-coverts cream-white; axillaries and under wing-coverts blackish-brown; flight-quills below dark brown with buff margins on the basal portion; lower aspect of tail greyish-brown. Bill pale yellow with black tip, feet slate, eyes pale yellow, bare space greenish. Collected on the Dawson River, Queensland, on the 1st of January, 1909.

Male (juvenile). Top of head and nape glossy blackish-brown; a line of white on the sides of the occiput which extends in a narrow band across the hind-neck; mantle dull dark brown; back, wings, and tail dull citron-green, somewhat paler on the outer webs of the flight-quills and tips of the tail-feathers; bastard-wing and inner webs of flight-quills dark brown with pale margins to the inner webs of the latter; chin, throat and fore-neck dark brown tinged with grey on the chin; breast, sides of body, abdomen, thighs, vent and under tail-coverts white; under wing-coverts dark brown; under-surface of flight-quills dark brown with whitish margins on the basal portions; lower aspect of tail pale brown, somewhat paler on the outer feathers. Eyes brown, feet leaden-blue. Collected at Cockatoo Springs, East Kimberley, North-west Australia.

Acanthorhynchus tenuirostris. SPINEBILL, to be added to p. 337.

Adult male. Entire top of head and nape glossy-black, slightly paler on the margins of the feathers which imparts a scalloped appearance; lores, and feathers above and behind the eye black, like the ear-coverts and a line running down the sides of the neck, which widens out on the sides of the breast; hind-neck and upper back coffee-brown; lower back, rump, scapulars, upper wing-coverts, and innermost secondaries dark slate-grey; bend of wing, bastard-wing, and primary-coverts blackish; flight-quills blackish-brown margined with white on the inner webs; base of tail and middle feathers blackish, the outer-feathers white on the inner webs at the tips; chin, cheeks, a wide band across the fore-neck, and centre of breast white; throat

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dark chestnut ; lower breast, abdomen, sides of body, thighs, and under tail-coverts pale chestnut ; axillaries, under wing-coverts, and margins of flight-quills below white ; remainder of quill-lining dark brown ; lower aspect of tail like the upper-surface but the dark pattern paler. Wing 67 mm. Collected on Kangaroo Island in July 1911.

Adult male. Top of head and nape glossy black with metallic margins to the feathers, which imparts a scalloped appearance ; lores, sides of face, and an irregular line down the sides of the neck, which expands out on the sides of the breast, black ; hind-neck chestnut-brown ; back coffee-brown ; rump and upper tail-coverts, scapulars, upper wing-coverts, and innermost secondaries dark slate-grey ; bend of wing, bastard-wing, and primary-coverts black ; flight-quills blackish-brown margined with white on the inner webs ; tail also blackish-brown at the base and middle feathers, the lateral feathers white on the inner webs of the apical portion ; chin, cheeks, a wide band across the fore-neck, and centro of breast white ; a band of dark chestnut across the throat ; breast, abdomen, sides of body, thighs, and under tail-coverts pale chestnut, axillaries, under wing-coverts, and inner-margins of flight-quills below white, remainder of quill-lining hair-brown ; lower aspect of tail blackish with white tips to the lateral feathers. Wing 65 mm. Eyes dark reddish, bill black with lighter tip ; legs dark grey. Collected on Mt. Lofty, near Adelaide, South Australia, on the 17th of May, 1910, and is the type of *A. t. loftyi*.

Immature male. Top of head, lores, and sides of face blackish-brown ; hind-neck, sides of neck, back, rump, upper tail-coverts, scapulars, and upper wing-coverts dark smoke-brown ; flight-quills blackish margined with white on the inner webs ; tail blackish at the base and on the middle feathers and white on the apical portion of the two outermost ones on each side ; chin and throat pale tawny, becoming darker on the breast ; abdomen, sides of body, thighs, and under tail-coverts cinnamon-chestnut ; axillaries, under wing-coverts, and inner margins of quills below white, remainder of quill-lining dark brown ; lower aspect of tail similar in colour and pattern to its upper-surface. Bill black, lower base orange, gape yellow, mouth orange, eyes brown, feet dark slate. Collected at The Basin, Dandenong Ranges, Victoria, on the 1st of January, 1909.

Young. Crown, lores, and sides of face dark brown ; sides of neck and hind-neck pale chestnut, becoming fulvous-brown on the mantle and upper back ; rump, upper tail-coverts, and outer aspect of wings dark greyish-brown ; flight-quills dark brown, slightly paler on the outer edges of some of the feathers and more broadly margined with white on the inner webs ; tail blackish, the two outermost on each side white on the terminal third of the feathers ; chin, cheeks, and middle of breast cream-white with a patch of burnt umber on the throat ; an irregular black band on the sides of the breast which joins on the centre ; abdomen, sides of body, thighs, and under tail-coverts bright fulvous ; axillaries, under wing-coverts, and margins of flight-quills below white ; remainder of quill-lining dark brown ; lower aspect of tail similar to its upper-surface. Collected at Mt. Lofty, South Australia, on the 26th of May, 1897.

Just after leaving nest. General colour of the upper-surface dark dusky brown, including the top of the head, sides of face, hind-neck, sides of neck, back, rump, upper tail-coverts, and upper wing-coverts ; flight-quills blackish with pale edgings to the outer webs and margined with white on the inner ones ; tail also blackish, white for the greater portion of the terminal half of the two most lateral feathers on each side ; under-surface of body tawny, duller on the chin, throat, and cheeks, and brighter on the breast, abdomen, sides of body, thighs, and under tail-coverts ;

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axillaries and under wing-coverts white like the inner margins of the flight-quills below, remainder of quill-lining dark brown; lower aspect of tail similar to its upper-surface. Eyes red, bill and feet black. Collected on Woronora River, New South Wales, on the 20th of January, 1914.

Acanthorhynchus superciliosus—WHITE-BROWED SPINEBILL, to be added to p. 346.

Immature male. General colour of the upper-surface dusky brown, including the top of the head, sides of face, back, rump, upper tail-coverts, and upper wing-coverts, tinged with chestnut on the hind-neck and sides of neck and more slightly on the tips of the greater upper wing-coverts; ear-coverts more or less blackish; flight-quills dark hair-brown, paler on the outer and inner margins; tail dark brown, white on the greater part of the terminal portion of the outer feathers; a pale line on the sides of the crown; under-surface ochreous with an approach to chestnut feathers on the throat and fore-neck; axillaries, under wing-coverts and inner edges of quills below white; lower aspect of tail dark brown at the base and on the middle feathers, and white for the greater part of the apical portion of the outer feathers. Bill black, lower base yellow; eyes pale orange; feet and legs purplish. Collected at Albany, South-west Australia, on the 27th of January, 1910.

Immature female. General colour of the upper-surface dusky brown, including the top of the head, sides of the face, back, rump, upper tail-coverts, and upper wing-coverts; sides of neck chestnut extending in a band across the hind-neck; flight-quills dark brown, paler on the edges of the outer webs and margined with white on the inner ones; tail blackish at the base and on the middle feathers and white for the greater part of the apical portion of the outer ones; a slight indication of a buff line on the sides of the crown; under-surface of body rust-brown, more or less grey on the chin and throat and minutely marked with white and dark bases to the feathers on the breast, abdomen, and sides of the body; thighs dusky; under tail-coverts pale buff; axillaries, under wing-coverts, and inner margins of quills below white; remainder of quill-lining dark brown; lower aspect of tail similar in colour and pattern to its upper surface. Eyes orange-red; bill blackish; feet and legs dark purple. Collected at Lake Muir, South-west Australia, on the 21st of March, 1919.

Nestling. General colour of the upper-surface, including the top of the head, back, wings, and tail dark coffee-brown with a narrow band of chestnut on the hind-neck; flight-quills dark brown; tail-feathers blackish-brown, the three outermost feathers on each side are for the greater part white; chin pale tawny; throat and fore-neck russet; breast, abdomen, thighs, sides of body, and under tail-coverts yellowish fawn-colour; axillaries whitish; quill-lining dark brown; lower aspect of tail similar to its upper-surface. Feet bluish-slate; upper mandible dark, lower yellowish. Collected at Tor Bay, South-west Australia, on the 28th of September, 1899.

Purnella albifrons—WHITE-FRONTED HONEY-EATER, to be added to p. 359.

Young male. General colour of the upper-surface dusky brown with pale margins to the feathers, including the top of the head, back, rump, and upper wing-coverts; flight-quills brown fringed with citron-yellow on the outer webs and buff on the inner ones; upper tail-coverts rust-brown with dark shaft-lines; tail dark brown slightly fringed with yellowish-green on the outer webs and pale buff at the tips; fore-head and lores dusky grey; chin, throat, and sides of face greyish-brown;

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moustacial streak and superciliary line white; fore-neck dusky brown; breast cream-white with brown shaft-lines; sides of the body similar, becoming uniform white on the abdomen; under tail-coverts pale fawn-colour; under wing-coverts and inner margins of flight-quills below buff, remainder of quill-lining hair-brown; lower aspect of tail dark brown. Collected at Carnamah, West Australia, in October, 1906.

Nearly adult. General colour of the upper-surface dark brown with pale margins to the feathers, including the top of the head, back, and upper wing-coverts; flight-quills dark brown margined with citron-yellow on the outer webs and buff on the inner ones; tail-feathers also dark brown slightly fringed with yellowish-green on the outer webs and whitish on the inner ones; base of fore-head and lores dusky grey; moustacial streak and ear-coverts white; chin, throat, and feathers behind the eye dusky grey; fore-neck dusky brown; breast, abdomen, and sides of body white with dark bases to the feathers; under tail-coverts white; thighs and upper tail-coverts rust-brown; under wing-coverts and margins of flight-quills below buff, remainder of quill-lining hair-brown; lower aspect of tail similar but rather paler. Eyes dark; feet and bill black. Collected at Schultz Landing, South Australia, on the 1st of January, 1912.

Nearly adult male. Top of head dusky brown, paler on the fore-head, intermixed with black on the crown and pale edgings to the feathers on the nape and sides of the crown; ear-coverts silvery-grey; sides of neck white; mantle, back, and scapulars blackish with drab-grey margins to the feathers, becoming paler and inclining to rust-brown on the lower back and rump; upper tail-coverts rust-colour; upper wing-coverts dark brown with pale edges to the feathers, becoming uniform on the bastard-wing and the two outer primaries; flight-quills dark brown, margined with citron-yellow on the outer webs and buff on the inner ones, some of the innermost secondaries have whitish margins on the outer webs; tail-feathers dark brown with pale edgings; lores, moustacial streak, chin, and throat whitish-grey, more or less intermixed with black; fore-neck dark brown; breast, abdomen, and sides of body white, more or less streaked with dark brown—inclining to buff on the thighs and under tail-coverts; under wing-coverts and inner margins of quills below buff; axillaries grey; remainder of quill-lining and lower aspect of tail dark brown. Eyes dark brown, lids and caruncle deep pink flesh; feet and bill black; throat orange. Collected at Overland Corner, South Australia, on the 2nd of December, 1913.

Nestling. Top of head blackish with pale margins to the feathers; back dark brown becoming paler on the rump and inclining to rust-colour on the upper tail-coverts; tail blackish with pale edges to the feathers; upper wing-coverts dark brown, slightly paler on the margins; flight-quills also dark brown margined with citron-yellow on the outer webs and buffy-white on the inner ones; throat and fore-neck dusky black; breast, abdomen, and sides of body white; thighs, vent, and under tail-coverts fawn colour; under wing-coverts and margins of flight-quills below pale buff, remainder of quill-lining dark brown like the lower aspect of the tail. Bill horn colour; gape yellow; eyes deep brown; feet and legs greyish-purple. Collected at Borewell, East Murchison, Mid-west Australia, in September, 1909.

GENUS--LICHMERA.

LICHMERA Cabanis, Mus. Heine.,

Vol. I., p. 118, (after Oct.)

1851. Type (by subsequent designation), Bonaparte, Comptes Rendus Acad. Sc. Paris, Vol. XXXVIII., p. 2, Jan. 2nd, 1854.. ..

Glyciphila ocularis Gould =

Meliphaga indistincta Vigors and Horsfield.

Stigmatops Gould, Handb. Birds

Austr., Vol. I., pp. 493-500,

(Dec.) 1865. Type (by monotypy)

Glyciphila ocularis and *G. subocularis* Gould =

Meliphaga indistincta Vigors and Horsfield.

SMALL "Honey-eaters" with long bills, long wings, long square tail and short legs and small feet.

The bill is longer than the head, nearly straight, the culmen arched, but the lower mandible nearly straight; tip decurved slightly and edges of mandibles anteriorly rather coarsely serrate, basal expansion slight and culmen slightly keeled posteriorly, anteriorly rounded, though laterally compressed; bill at base deeper than broad, nasal groove long, nostril as linear slits, strongly operculate, interramal space long, nearly one-third the length of the mandible; few small nasal bristles, and rictal bristles obsolete.

The wing has the first primary short, less than half the length of the second, which is less than the sixth but longer than the secondaries; the third and fourth primaries longest and subequal.

The tail is long and square.

The legs are short and rather stout, the tarsus appearing booted in front, but in the immature six scutes are clearly seen, posteriorly bilaminate; the anterior toes slender, the hind-toe stouter; the middle toe and claw longer than the hind-toe and claw, the outer toe longer than the inner; claws slender but curved.

The silvery patch of feathers behind the eye seems the attraction of genus-lumpers for the retention of this group.

THE BIRDS OF AUSTRALIA.

When Cabanis dealt with birds in the *Museum Heineanum* he had not many Honey-eaters to deal with, but he proposed a few new genera, among them the genus *Lichmera*, including two species, *L. australasiana*=*Certhia australasiana* Shaw and *L. ocularis*=*Glyciphila ocularis* × *subocularis* Gould, writing "Die Gruppe steht in der Bildung zwischen *Meliornis* und *Ptilotis*." No type was indicated nor any generic description given, so that either species was equally available for selection.

Bonaparte, in *Notes Ornith. Coll. Delattre*, p. 55, 1854, reviewing Reichenbach's and Cabanis' genera of Honey-eaters, wrote: "*Ptilotis unicolor* Gould, forme, avec *Glyciphila ocularis*, le genre *Stomiopara*, Reich. Cabanis fait de cette dernière espèce le type de son genre *Lichmera*." This was published in 1854 and determines the type of the genus *Lichmera* in agreement with all the requirements of the International Code.

In 1855, when Gray prepared his *Catalogue of Genera and Sub-genera of Birds*, he overlooked this designation and simply referred *Lichmera* Cabanis to the synonymy of *Phylidonyris* Lesson of 1831, of which he selected *Certhia australasiana* Shaw as the type.

In 1865 Gould ignored this altogether and used the genus *Lichmera* Cabanis for *C. australasiana*, writing: "Of this form I consider there is only one species known, the *L. australasiana*, for I cannot agree with M. Cabanis in associating with it the *Glycephala* (*Stigmatops*) *ocularis*," and then included the genus *Stigmatops* Gould without any other explanation, stating "Of this form, I believe two, if not three, species inhabit Australia, and as many more the islands to the northward."

Custom has recently followed this incorrect usage by Gould, but we must now revert to *Lichmera*, which has undoubtedly the prior claim.



H Grönvold del

Witherby & Co

LICHIMERA INDISTINCTA
(LEAST HONEY-EATER)

Order PASSERIFORMES.

Family MELITHREPTIDÆ.

No. 660.

LICHMERA INDISTINCTA.

LEAST HONEY-EATER.

(PLATE 527.)

MELIPHAGA INDISTINCTA Vigors and Horsfield, Trans. Linn. Soc. (Lond.), Vol. XV., p. 315, Feb. 17th, 1827: King George Sound, South-west Australia.

Meliphaga indistincta Vigors and Horsfield, Trans. Linn. Soc. (Lond.), Vol. XV., p. 315, Feb. 17th, 1827.

Glyciphila (?) *ocularis* Gould, Synops. Birds Austr., pt. iv., App., p. 6, April 1st, 1838: "Van Diemen's Land," error=New South Wales; *id.*, Proc. Zool. Soc. (Lond.), 1837, p. 154, Dec. 1838; *id.*, Birds Austr., pt. xxiv. (Vol. IV., pl. 31), Sept. 1st, 1846; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 213, 1884; Hall, Key Birds Austr., p. 40, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 374, 1901; Ashby, Trans. Roy. Soc. South Austr., 1901, p. 134 (W.A.); Hall, Emu, Vol. I., p. 102, 1902 (N.W.A.); Le Souëf, *ib.*, Vol. II., p. 147, 1903 (N.T.); Milligan, *ib.*, Vol. III., p. 18 (W.A.); Carter, *ib.*, p. 39 (S.W.A.); *id.*, *ib.*, p. 92 (N.W.A.); H. E. Hill, *ib.*, p. 228, 1904 (W.A.); Milligan, *ib.*, Vol. IV., p. 10 (W.A.); Lawson, *ib.*, p. 135, 1905 (W.A.); Berney, *ib.*, Vol. V., p. 75, 1905 (N.Q.); Berney, *ib.*, Vol. VII., p. 80, 1907 (Food); Cornwall, *ib.*, Vol. VIII., p. 139, 1909 (N.Q.); Gibson, *ib.*, Vol. IX., p. 75, 1909 (W.A.); Campbell, *ib.*, Vol. XVIII., p. 264, 1919 (W.A.).

Glyciphila (?) *subocularis* Gould, Synops. Birds Austr., pt. iv., App., p. 6, April 1st, 1838: New South Wales; *id.*, Proc. Zool. Soc. (Lond.), 1837, p. 154, Dec. 1838; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 214, 1884; Whitlock, Emu, Vol. VIII., p. 183, 1909 (W.A.); Broadbent, *ib.*, Vol. X., p. 238, 1910.

Stigmatops ocularis Gould, Handb. Birds Austr., Vol. I., p. 500, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 189, 1878; *id.*, Proc. Zool. Soc. (Lond.), 1877, p. 351; *id.*, Tab. List Austr. Birds, p. 12, 1888; North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 79, 1906; Mathews, Handl. Birds Austral., p. 95, 1908; *id.*, Emu, Vol. IX., pp. 14-241, 1909-10 (N.W.A.); Cleland, *ib.*, p. 224, 1910 (Food); Hill, *ib.*, Vol. X., p. 286, 1911 (N.W.A.); *id.*, *ib.*, Vol. XII., pp. 260-2, 1913 (N.T.); Orton and Sandland, *ib.*, Vol. XIII., p. 79 (S.W.A.); Barnard, *ib.*, Vol. XIV., p. 49, 1914 (N.T.); H. L. White, *ib.*, Vol. XVI., p. 227, 1917 (N.T.); Campbell and Barnard, *ib.*, Vol. XVII., p. 32, 1917 (N.Q.); Macgillivray, *ib.*, p. 205, 1918 (N.Q.); Campbell, *ib.*, Vol. XVIII., p. 5, 1918; Ashby, *ib.*, Vol. XX., p. 135, 1921 (W.A.); Le Souëf, *ib.*, p. 144 (W.A.); Alexander, *ib.*, p. 167 (W.A.); Whitlock, *ib.*, p. 186 (W.A.).

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- Stigmatops subocularis* Gould, Handb. Birds Austr., Vol. I., p. 501, 1865 ; Ramsay, Proc. Zool. Soc. (Lond.), 1875, p. 594, 1876 ; *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 189, 1878 (N.Q.) ; *id.*, *ib.*, 2nd Ser., Vol. I., 1886, p. 1,092, 1887 (N.W.A.) ; *id.*, Tab. List Austr. Birds, p. 12, 1888 ; Whitlock, Emu, Vol. IX., p. 211, 1910 (W.A.).
- Stigmatops indistincta indistincta* Mathews, Nov. Zool., Vol. XVIII., p. 402, 1912 ; *id.*, List Birds Austr., p. 270, 1913.
- Stigmatops indistincta ocularis* Mathews, Nov. Zool., Vol. XVIII., p. 402 ; *id.*, List Birds Austr., p. 271, 1913.
- Stigmatops indistincta rufescens* Mathews, Nov. Zool., Vol. XVIII., p. 402, Jan. 31st, 1912 : Crawford Springs, Northern Territory ; *id.*, List Birds Austr., p. 271, 1913.
- Stigmatops indistincta media* Mathews, Nov. Zool., Vol. XVIII., p. 403, Jan. 31st, 1912 : Parry's Creek, North-west Australia ; *id.*, List Birds Austr., p. 271, 1913 ; *id.*, South Austr. Orn., Vol. 3, p. 208, 1918.
- Stigmatops indistincta perplexa* Mathews, Nov. Zool., Vol. XVIII., p. 403, Jan. 31st, 1912 : Marble Bar, North, *i.e.*, Mid-west Australia ; *id.*, List Birds Austr., p. 271, 1913.
- Stigmatops indistincta melvillensis* Mathews, Austral Av. Rec., Vol. I., pt. 2, p. 50, April 2nd, 1912 : Melville Island, Northern Territory ; *id.*, List Birds Austr., p. 271, 1913.
- Stigmatops indistincta ovida* Mathews, Austral Av. Rec., Vol. I., pt. 4, p. 98, Sept. 18th, 1912 : Cairns, North Queensland ; *id.*, List Birds Austr., p. 271, 1913.
- Stigmatops indistincta* Mathews, Handl. Birds Austr., p. 270, 1913 ; Whitlock, Emu, Vol. XXIII., p. 277, 1924.
- Lichmera indistincta yorki* Mathews, Austral Av. Rec., Vol. V., pts. 2-3, Feb. 21st, 1923, p. 37 : York, West Australia.
- Lichmera indistincta perthi* Mathews, *ib.* : Perth, West Australia ; Feb. 21st, 1923 : Perth, West Australia.
- Lichmera indistincta milligani* Mathews, *ib.* : Stirling Ranges, South-west Australia.
- Lichmera indistincta* Mathews, *ib.*
- Lichmera indistincta indistincta* Mathews, *ib.*

DISTRIBUTION. Northern Australia, reaching down Eastern Australia into Victoria, (rarely) and on the west into the south-west, but not in Central or South Australia.

Adult male. Top of head, sides of crown, and nape mouse-brown ; hind-neck, sides of neck and back umber-brown, becoming paler and inclining to rust-brown on the rump and upper tail-coverts ; upper wing-coverts olive-brown tinged with yellow ; flight-quills hair-brown fringed with yellowish-green on the outer webs and margined with white on the inner ones ; tail bronze-brown ; lores and eye-ring somewhat darker than the crown of the head, with numerous silvery-white dots below and behind the eye ; ear-coverts dark brown somewhat paler at the tips ; chin and throat pale grey ; fore-neck and breast lead-grey with pale shaft-streaks ; abdomen, sides of body, thighs, and under tail-coverts cream-white ; axillaries and under wing-coverts pale buff ; under-surface of flight-quills dark brown with buffy-white margins ; lower aspect of tail similar to its upper-surface but paler and having white shafts to the feathers. Bill black, eyes silver-grey, feet grey. Total length 152 mm. ; culmen 15, wing 72, tail 60, tarsus 19. Figured. Collected at Napier Breome Bay, North-west Australia, on the 18th of February, 1910. (Left hand figure.)

LEAST HONEY-EATER.

Adult female from the same locality similar, but always smaller.

Adult male. Top of head and nape dusky-brown; hind-neck, sides of neck, back, rump, upper tail-coverts, scapulars, and upper wing-coverts dark umber-brown; flight-quills dark brown fringed with yellowish-green on the outer webs and whitish on the inner ones; tail bronze-brown fringed with yellowish-green on the outer webs of the feathers; lores and eye-region black, minutely dotted with white on the hinder-portion; cheeks, chin, throat, and breast greyish-brown; abdomen, flanks, and under tail-coverts pale fawn-colour like the under wing-coverts; axillaries and marginal under wing-coverts pale yellow, thighs rust-brown; under-surface of flight-quills dark brown with pale margins; lower aspect of tail pale greyish-brown. Eyes brown, feet and tarsus leaden-blue, bill black. Figured. Total length 140 mm.; culmen 14, wing 70, tail 54, tarsus 16. Collected on Melville Island, Northern Territory, on the 4th of June, 1912. (Bottom figure.)

Adult female from the same locality similar, but always smaller.

Adult female. General colour of the upper-surface pale fawn-brown tinged with olive, including the top of the head, hind-neck, sides of neck, scapulars, upper back, upper wing-coverts and innermost secondaries; some of the median and greater coverts paler and inclining to white at the tips; lower back, rump, and upper tail-coverts fawn-colour; flight-quills dark brown fringed with yellowish-green on the outer webs and margined with white on the inner ones; tail-feathers pale brown with whitish edgings at the tips and more or less tinged with bronze-green on the outer webs; space in front of the eye and ear-coverts rather darker than the top of the head; cheeks, chin, and throat pale buff; breast very pale slate-grey tinged with yellow; abdomen yellowish-white, more or less tinged with grey on the flanks; vent and under tail-coverts cream-white, thighs somewhat darker; axillaries and under wing-coverts buffy-white tinged with yellow; under-surface of flight-quills hair-brown with pale margins; lower aspect of tail yellowish-brown with white shafts to the feathers. Eyes grey, feet slate-blue, bill black. Total length 109 mm.; culmen 13, wing 59, tail 48, tarsus 17. Figured. Collected at Cape York, North Queensland, on the 9th of December, 1912. (Top figure.)

Adult male from the same locality similar, but always larger.

Adult female. Top of head, hind-neck, sides of neck, back, rump, upper tail-coverts, scapulars, and upper wing-coverts fawn-colour; flight-quills fawn-brown, tinged on the outer webs with yellow and margined on the inner ones with buffy-white; tail pale bronze-brown tinged with yellow; chin, throat, and sides of face pale fawn-colour; ear-coverts rather darker than the sides of the neck; breast pale fawn-colour slightly tinged with yellow, the yellow increasing on the abdomen, sides of the body, and under tail-coverts; axillaries and under wing-coverts pale lemon-yellow; under-surface of flight-quills pale brown with whitish margins; lower aspect of tail similar to its upper-surface but paler and having white shafts to the feathers. Eyes brown, feet and bill dark brown. Total length 120 mm.; culmen 13, wing 62, tail 46, tarsus 16. Figured. Collected on Crawford Springs Station, Northern Territory (?), on the 4th of July, 1902, and is the type of *rufescens*. (Right hand figure.)

Adult female. General colour of the upper-surface pale earth-brown, including the top of the head, back, wings, and tail; outer edges of flight-quills yellow, inner webs dark brown with pale margins; rump and upper tail-coverts inclining to pale rust-brown; tail-feathers somewhat paler at the tips; feathers in front of the eye black; the feathers round the eye blackish minutely dotted with white; under-surface delicate pale grey slightly tinged with pale fawn-colour, somewhat darker on the throat and fore-neck and paler on the abdomen, under tail-coverts, and

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under wing-coverts; under-surface of flight-quills dark hair-brown with pale margins; lower aspect of tail similar to its upper-surface. Feet grey, bill black. Wing 60 mm. Collected at Normanton, Gulf of Carpentaria, North Queensland, on the 31st of March, 1914.

Eggs. Two eggs usually form the clutch. A pair taken at Pilbarra Goldfield, Coongan River, Mid-west Australia, on the 4th of July, 1908, is white in colour, with a few minute specks of pale chestnut scattered about the larger end of each egg. Short ovals in shape, very compressed and pointed about the smaller end; surface of shell fine, and slightly glossy, 17 by 12 mm.

Nest. Small cup-shaped structure, constructed chiefly of soft bark, lined with a soft downy vegetable substance, and suspended in the small fork of a shrub, and often leaning over water. Dimensions over all, $2\frac{1}{2}$ to 3 inches across by $2\frac{1}{2}$ to 3 inches deep; egg cavity $1\frac{1}{2}$ inches across by nearly $1\frac{1}{2}$ inches deep.

Breeding-months. (June) July to January.

GOULD wrote the first field-notes regarding this species as follows: "I met with the Brown Honey-eater in abundance on Baker's Island at the mouth of the Hunter, and on the banks of the Namoi in the interior of New South Wales; and Gilbert records that he found it equally numerous at Swan River. In its actions and manners it displays the usual activity of the Honey-eaters generally, creeping and clinging among the branches with the greatest ease, and particularly affecting those most laden with blossoms, into which it inserts its brush-like tongue to procure the sweet pollen; like other species of the group, it also feeds with avidity upon all kinds of small insects. Its powers of song are considerable, the most frequently repeated note being remarkably shrill, rich, clear, and distinct in tone. While the female is sitting upon her eggs the male sings all day long with scarcely any intermission. September, October and November constitute the breeding-season."

Ramsay wrote from the Cardwell district: "This species seems plentiful, inhabiting the mangroves and margins of the scrubs on the water's edge. They betake themselves to almost any of the forest trees when they are in bloom, attracted by the honey and insects. In the neighbourhood of Sydney they frequent the orange-groves, and occasionally breed among the branches during the months of October and November. Their cry is peculiar, but not unpleasant, and at times varied." He later added a note stating that the latter part of the above remarks referred to *S. ocularis*, the Sydney species, differentiating the Cardwell bird as *S. subocularis*.

Berney has recorded from the Richmond district, North Queensland: "Found a nest containing two eggs, white and spotless, on 2nd June, 1905, which is, I think, an unusual date. They are sweet singers. From experience I can quite bear out Gould's statement that 'while the female is sitting on her eggs the male sings all day, with scarcely any intermission.' The little

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Brown Honey-eaters are plentiful on Spring Valley and can be heard along any watercourse where the tea-trees and eucalypts are in flower. I think, with Mr. Tom Carter, that they confine themselves to the vicinity of ranges."

Cornwall's notes from Mackay, North Queensland, read: "On the fringes of the mangroves, more especially where they merge into open forest country, the little Brown Honey-eater is particularly abundant. All they lack in brilliance of plumage finds ample compensation in volume of sound, for surely never before was so small a body endowed with such powerful vocal abilities. They nest amongst the mangroves, and generally choose the time that the latter are in bloom—September, October and November. The nest is a pretty little cup-shaped structure, and those I have found have been placed about four or five feet from the ground. Two eggs constitute the clutch."

H. L. White has recorded McLennan's notes from the Northern Territory: "Pera Head, 4/7/15 and Macarthur River, 7/8/15. Numerous in flowering paper barks. Bickerton Island, 23/8/15. A few birds, Goyder River, 8/9/15; Glyde River, 11/9/15; and Liverpool River, 19/9/15 and 21/9/15. Numerous in mangroves. King River: Numerous in mangroves, in flowering trees along river flats, about springs and, occasionally, seen in sandstone ranges. Roper River: Numerous in the mangroves along river. Stomach small insects."

Macgillivray has noted: "Brown Honey-eaters were common on the Archer River, where they were feeding on the flowering paper-barks (*Melaleuca*). On the 25th July Mr. McLennan flushed one from its nest four feet from the ground in a small leaved paper-bark, it contained two eggs just chipping."

Ashby wrote: "This little songster was common at Claremont (West Australia), also at the 'soaks' at Watheroo and at Dongara and Geraldton. The song of this diminutive songster made a great appeal to us. More than once we thought that its song strikingly resembled that of the Reed-Warbler. I think it easily the best songster among the Honey-eaters, and should greatly like to have the charm of its notes resounding in our South Australian bush. The fact of this bird having spread from the tropics down the west coast to the Leeuwin, and having failed to extend down the east coast of Australia gives scope for research."

Mr. Tom Carter has written: "In your 1912 'Reference List' no subspecies of this Honey-eater is given as occurring about the North-west Cape or mid-west of West Australia. These birds were common in the scrub and dwarf timber in the gorges of the rugged ranges that extend from Point Cloates to Vlaming Head (near N.W. Cape), a distance of nearly eighty miles. Their loud cheerful songs could be heard all the year round. On two occasions only were any of these birds observed away from these ranges, viz., one was

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seen at a flooded flat about 28 miles inland from Point Cloates, and another in some scrub among the coast hills. No eggs were ever procured, although an empty new nest was found that apparently belonged to this species.

"In the south-west this species is fairly well distributed. The birds are very common in the thick Peppermint scrub that grows down to the beach near Albany. They were also observed at the Margaret and Vasse Rivers and Lake Muir, also at Kellerberin. They are not common about Broome Hill, but a few could always be heard or seen in the thick scrub and 'suckers' growing on a high stony ridge on my land. I shot one there on September 8th, 1910, that contained eggs in an advanced state. They seem to sing all the year round and like thick scrubby places."

Mr. J. P. Rogers wrote: "At Marngle Creek this species was not numerous, but on the Fitzroy and Jegurra Creek they were very numerous. At Mungi they were very rare. Is a common species in most parts of West Kimberley, North-west Australia. From Melville Island Rogers wrote: "Cooper's Camp, Nov. 20th, 1911. This species was very numerous at the outer edges of the mangrove thicket that is on the landward side. Males are much larger than the females. On the north side of the island this species was not so numerous as at Cooper's Camp."

Hall published Rogers' earlier notes sent from the Derby district, in which he stated: "The notes are musical. One bird came to a bush near my camp on February 4th, 1900, and sang at intervals for a few minutes."

Whitlock wrote from the Pilbarra Goldfield: "Not uncommon on the upper Coongan, but becoming scarcer down the river and on the de Grey. One specimen I shot was remarkably small, hardly larger than a *Myzomela*. Its favourite haunt was in thickets growing in the shingly bed of the river where flood *débris* was abundant, and where permanent pools were to be found. Here its song was to be heard from early sunrise to sunset. The tiny little nests are difficult to find. Several I discovered were attached to wisps of herbage brought down by the floods, another was in a tall, cylindrical dead bush, where no one would have dreamed of looking for it. I was rather unlucky as regards eggs. Several clutches were quite unblowable, owing to their advanced state of incubation. Under such conditions one is practically helpless with such fragile eggs. It was a pretty sight to see these little Honey-eaters extracting their food from the gorgeous flowers of the Sturt pea—the latter a feature in themselves, and worth much travelling to view in their natural surroundings of rugged and dark basaltic rocks."

G. F. Hill wrote from Kimberley, North-west Australia: "A very common bird in all localities on the mainland and islands. Eggs were taken from the beginning of March to the end of June from nests built in many species

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of trees and grass. The nests vary much in appearance, some being built entirely of grass and spider-web, whilst others contain only bark and spider-egg cases. The male birds are noticeably larger than the females and those figured by Gould are typical of the North Kimberley birds. Small parties were seen flying between Eclipse and Graham Moore Islands and the mainland."

A. S. Le Souëf has written: "I was glad to hear this cheerful songster at Mr. McKenzie Grants' station near Geraldton. It was singing with its Reed-Warbler's note in exactly the same way as we heard it at Stradbroke Island, Queensland, last year."

The technical history is somewhat complicated from the beginning, as among the descriptions of birds given by Vigors and Horsfield in their basic Essay is included: "*Meliphaga indistincta* Mel. supra olivaceo-fusca, subtus sordide albida, remigibus flavescentibus. This bird, which was found by Mr. Brown at King George's Sound, on the South Coast of New Holland, appears closely allied to the last (*M. lunulata*). It is, however, in very bad condition and scarcely admits of a description. The dimensions appear nearly the same as those of *Mel. lunulata*. It has much the appearance of a young bird."

This was apparently ignored by Gould, although the type-specimen was available in London, and in 1837 he described *Glyciphila* (?) *ocularis* from Van Diemen's Land and *G.* (?) *subocularis*, writing regarding the latter: "A species from New South Wales, which differs from *Gly. ocularis* in being rather smaller, and in its more olive colouring."

In his folio work he correctly referred *G. ocularis* to New South Wales, as it does not occur in Tasmania, and made *G. subocularis* a synonym which it certainly was, being based on a female bird. In his "Handbook" he revoked again, writing, "In the folio edition of the *Birds of Australia* I united this bird with *S. ocularis*, but upon further examination and comparison, I have come to the conclusion that it is different. I believe that another species of this form exists on the north-west coast. The *S. subocularis* is a smaller bird than *S. ocularis*, and consequently one of the most diminutive of the *Meliphagidæ*; besides differing in size, a yellower tint pervades the entire plumage, and the little spangle-like feathers behind the eye are scarcely observable; in all other respects the two birds are very similar. The *S. subocularis* was shot on the north-west coast, and the skin kindly sent to me by Lieut. Emery of H.M.S. 'Beagle.'" When Gadow catalogued the birds in the British Museum he ignored the real typical specimen, if not the actual type of *G. ocularis*, which is still preserved, but marked as *type* of *G. subocularis* the specimen referred to above as sent by Lieut. Emery of H.M.S. "Beagle," which of course is not the real type by any means.

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This transference of names by Gould misled later workers, and we find Ramsay recognising *Stigmatops subocularis* as the Cairns bird, and then from Derby, North-west Australia, he recorded it, observing: "Those who will take the trouble to compare veritable specimens of *S. ocularis* Gould with the present species, will at once see the differences pointed out by Mr. Gould, and the distinction between these two species," entirely overlooking the original confusion.

In 1901 Ashby wrote: "Guilford, near Perth. One male. This skin is considerably more grey in plumage than is a skin I have from York, W.A., collected by myself in 1889. The York skin is decidedly more rufous in coloration, the under-side of the head markedly so. The York skin is not sexed. The district is dry, while Perth is a wet district."

Milligan also noted that they were "Fairly numerous in the flowering scrubs (in the Stirling Ranges). They differ slightly in colour from the Swan River Bird," and later that they were common in the Wongan Hills district.

Campbell and Barnard, reporting upon birds of N. Queensland, wrote: "The various races of this plain coloured but sweet songster have perplexed ornithologists much. There was even a difference in two males which we collected in the same locality, but they were smaller than southern males. Again the males are the larger of the two sexes, and possess more greyish heads than the females."

Later, Campbell concluded: "A review of a large series of this widely distributed species makes it appear that, at most, there are only three races—eastern (*ocularis*), western (*indistincta*) and northern (*rufescens*), with which Mathews's two other subs.—*perplexa* and *media*—are apparently synonymous." As a matter of fact, long series show very many subspecies as was first noted by me in 1912.

When I prepared my "Reference List" in 1912 I ranged this species under five subspecies, giving a note of explanation which may be here quoted:

"Note.—Gould described two species of *Glyciphila* (?) in the *Synops. Birds Austr.*, pt. iv., App. 6, 1838, as follows:—

<i>G. (?) ocularis</i>	Van Diemen's Land
<i>G. (?) subocularis</i>	New South Wales

"Later he stated that *G. ocularis* came from New South Wales and *G. subocularis* he attempted to apply to a bird he had received from the north-west coast. Most writers have indicated their belief that *subocularis* was based on a young specimen of *ocularis*, while as many recognised that the north-west bird was separable. The accumulation of large series of this bird proves that many races can be differentiated, and also that *G. subocularis* was founded on a young bird, and that in view of the indeterminate locality it is

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better suppressed as a synonym of *G. ocularis*. Moreover, the oldest name for the species is *Meliphaga indistincta* Vigors and Horsfield, as pointed out in the *Cat. Birds Brit. Mus.*, Vol. IX., pl 213, 1884, but not utilised."

The subspecies I allowed were named:

Stigmatops indistincta indistincta (Vigors and Horsfield).

South-west Australia.

Stigmatops indistincta ocularis (Gould).

Queensland, New South Wales, Victoria.

Stigmatops indistincta rufescens Mathews.

"A rufous-brown phase, quite distinct from any other; the colouring throughout being sandy or rufous where in the type it is brownish or olive or some shade of those colours. Crawford Springs, Northern Territory."

Northern Territory.

Stigmatops indistincta media Mathews.

"Darker than *S. i. perplexa* but paler than *S. i. indistincta*, and having the throat uniformly coloured with the breast, but the belly very light. Parry's Creek, North-west Australia."

North-west Australia (Wyndham).

Stigmatops indistincta perplexa Mathews.

"Differs from *S. i. indistincta* in its paler coloration above and below, especially on the throat and abdomen. Marble Bar, North-west Australia."

North-west Australia (Coongan River to Derby).

Upon receipt of Melville Island specimens I added:

Stigmatops indistincta melvillensis.

"Differs from *S. i. media* in being greenish-brown above and in its smaller size. Melville Island."

I then noted I had omitted to name the Cairns bird, which had been recognised as distinct by Ramsay and others, so I introduced:

Stigmatops indistincta ovida.

"Differs from *S. i. ocularis* in its smaller size and darker throat. Cairns."

North Queensland.

These seven subspecies were recognised in my 1913 "List" without any alteration, but it will be noted that more are indicated by Ashby's note that the York bird differed from the Perth one, and the type locality is King George's Sound in West Australia. As Perth birds are commonly different from Albany ones, three forms are suggested in this south-west corner. Those I have named. Also the Stirling Ranges bird I regarded as differing slightly from the Swan River one. The Geraldton, etc., form may also differ from the Derby form, while the King River bird may not agree.

NOTE.

LICHMERA ALBO-AURICULARIS.

Stigmatops albo-auricularis Ramsay, Proc. Linn. Soc. N.S.W., Vol. III., p. 75, September, 1878 : South-east Coast of New Guinea.

Stigmatops alboauricularis Ramsay, Tab. List Austr. Birds, p. 12, 1888 : Islands of Torres Straits and S.E. Coast of New Guinea.

Glycyphila albiauricularis Hall, Key Birds Austr., p. 40, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 377, 1901.

Stigmatops albiauricularis Mathews, Handl. Birds Austral., p. 95, 1908 : Cape York ; *id.*, Nov. Zool., Vol. XVIII., p. 403, 1912 (note).

This species, though included in the Australian List by the above authors, has not yet been collected on the Australian mainland, nor is there any definite record of its occurrence on the Torres Straits Islands.

GENUS—PTILOTINA.

PTILOTINA Mathews, Austral Avian Record,

Vol. II., pts. 2-3, p. 60, Oct. 23rd, 1913.

Type (by original designation) *Ptilotis analoga mixta* Mathews.

I DIAGNOSED this group thus: "Differs from *Meliphaga* Lewin (type, *M. lewini* Swainson) in its stouter bill and feet, though shorter wing and much shorter tail; from *Microptilotis* Mathews in its stouter comparatively shorter bill though longer wing and stouter feet."

The so-called genus *Ptilotis* was accepted by the coloration of the ear-coverts; all Australasian Honey-eaters with coloured (generally yellow) ear-coverts being classed in the one genus irrespective of all other differences. In this series several subsidiary groups as well as distinct genera can be characterised.

The present genus consists of medium-sized Honey-eaters with bills long and stout, long wings, long tail and short and stout legs and feet.

The bill is slightly shorter than the head, laterally compressed anteriorly, a little expanded basally, gape fleshy, the culmen arched and semi-keeled, the tip decurved and posteriorly notched; the nasal groove fairly long and linear, nostrils open but operculate; the under mandible strong, the gonys less than half the length of the bill but marked; the interramal space long, fairly narrow and feathered; rictal bristles few.

The wing has the first primary short, but a little more than half the length of the second, which is shorter than the secondaries; the third primary about equal to the seventh, the fourth, fifth and sixth a little longer and equal. The tail is long, and square in shape.

The tarsus is booted in front and bilaminate behind; the outer toe is longer than the inner toe, while with the claw it is about equal to the middle toe alone; the middle toe and claw longer than the hind-toe and claw, all the claws short and rounded.

Order PASSERIFORMES.

No. 661.

Family MELITHREPTIDÆ.

PTILOTINA ANALOGA.

YELLOW-FRONTED HONEY-EATER.

(PLATE 528.)

[PTILOTIS ANALOGA Reichenbach, Handb. Spec. Ornith., Abth. II., Handb. Meropinæ, Vol. I., p. 103 (Icones Cont., No. IX., March 1st, 1852), based solely on Hombron et Jacquinot, reproduced on pl. cccclxvii, 3,332: Oceanien=S.W. New Guinea. Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 227, 1884.]

Ptilotis notata Gould, Annals Mag. Nat. Hist., Ser. III., Vol. XX., p. 269, Oct. 1st, 1867: Cape York, Queensland.

Ptilotis notata Gould, Annals & Mag. Nat. Hist., Ser. II., Vol. XX., p. 269, 1867; *id.*, Birds Austr. Suppl., pl. 41 (pt. v.), Aug. 1st, 1869; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 189, 1878; Ramsay, Tab. List Austr. Birds, p. 12 (note), 1888; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 383, 1901; (?) Le Souëf, Emu, Vol. II., p. 147, 1903 (N.T.); Macgillivray, *ib.*, Vol. XIII., p. 178, 1914 (N.Q.); *id.*, *ib.*, Vol. XVII., p. 205, 1918 (N.Q.); Campbell, *ib.*, Vol. XX., p. 63, pl. v., 1920.

Ptilotis analoga notata Mathews, Nov. Zool., Vol. XVIII., p. 403, Jan. 31st, 1912.

Ptilotis analoga mixta Mathews, *ib.*: Johnston River, North Queensland.

Ptilotina analoga notata Mathews, List Birds Austr., p. 271, 1913; *id.*, South Austr. Orn., Vol. 3, p. 208, 1915.

Ptilotina analoga mixta Mathews, List Birds Austr., p. 271, 1913.

DISTRIBUTION. Northern Queensland from Cape York to Cairns.

Adult male. General colour of the upper-surface olive-green including the top of the head, sides of the crown, hind-neck, sides of neck, back, rump, upper tail-coverts, and upper wing-coverts; flight-quills dark brown fringed with bronze-green on the outer web and pale buff on the inner margins; tail brown fringed on the outer webs with bronze-green; lores black like the patch below the eye; ear-coverts sulphur-yellow; under-surface greyish-olive including the chin, throat, breast, abdomen, sides of body, and under tail-coverts; thighs, rust-brown; axillaries like the sides of the body; marginal under wing-coverts pale buff, the remainder pale yellow like the inner margins of the quills below, remainder of the quill-lining dark brown; lower aspect of tail pale brown, with a glossy appearance and white shafts. Bill black, feet slate, eyes brown. Total length 180 mm.; culmen 17, wing 82, tail 73, tarsus 25. Figured. Collected on the Johnston River, North Queensland, on the 22nd of June, 1900, and is the type of *Ptilotis analoga mixta*.

Adult female similar to the adult male.



H. Grönvold, del

Witherby & Co

MICROPTILOTIS GRACILIS
 (LITTLE YELLOW-SPOTTED HONEY-EATER)
PTILOTINA ANALOGA
 (YELLOW-SPOTTED HONEY-EATER)

NATIONAL MUSEUM OF NATURAL HISTORY

YELLOW-FRONTED HONEY-EATER.

Juvenile. General colour of the upper-surface dull olive-green, including the top of the head, hind-neck, sides of neck, back, rump, upper tail-coverts, wings and tail; inner webs of flight-quills dark brown margined with yellowish-white; sides of face only partially feathered, similar to the back but paler; lores blackish; ear-coverts sulphur-yellow; chin and throat yellowish-white; breast and abdomen similar to the upper-surface but much paler; sides of body, vent, and under tail-coverts inclining to grey; thighs pale rust-colour; marginal under wing-coverts yellowish-buff; under-surface of flight-quills dark brown margined with yellow; lower aspect of tail similar to its upper-surface. Eyes black, feet lavender, bill black, palato chrome-yellow, gape lemon-yellow. Collected at the Cable Station, Cape York, North Queensland, on the 10th of July, 1913.

Eggs. Two eggs usually form the clutch, and very seldom three are met with. A clutch of two eggs taken at Tinaroo scrubs, Barron River, North Queensland, on the 9th of November, 1908, is of a beautiful pearly-white, boldly spotted with deep chestnut, and a few markings of purplish-brown, confined chiefly to the larger end of each egg. Rather oval in shape, surface of shell fine and slightly glossy.

Nest. A rather deep cup-shaped structure, composed of pieces of bark and dead leaves, woven together with wild cotton, and lined with wild cotton or silky down from plants, suspended by the rim in a small fork of a tree or shrub, usually in dense scrub, and placed at heights varying from 4 to 12 feet from the ground. Dimensions over all about 4 inches across by 3 inches deep; inside 3 inches across by 2 inches deep.

Breeding-months. October to March.

WHEN Gould described *Ptilotis notata* from Cape York he wrote: "This species is allied, on the one hand, to the large *Ptilotis chrysotis*, and, on the other, to the small *P. gracilis*; its most remarkable feature, when compared with these birds, is its long and stout bill, which is both longer and stouter than that of the former species; in all its other measurements it is considerably smaller, while they much exceed those of the *P. gracilis*. It is closely allied to, but quite distinct from, the *P. similis* of the Aru Islands. Gilbert collected this bird at Brown's Lagoon, on the 20th December, 1844, when travelling with Leichardt from Moreton Bay to Port Essington, and I have lately received specimens through Mr. Jardine from the Cape York district of Queensland."

Macgillivray mentioned it on the Great Barrier Reef Islands and Barnard wrote from Cape York: Very common. Breeds in the shrubs on the edges of scrub and along watercourses."

Macgillivray's further notes read: "At Cape York this Honey-eater was numerous in the scrubs, but only occasional in the open forest or mangroves. It nests in the summer months, the nest being placed low down, and usually containing two eggs. One nest found in the scrub on the 7th February, 1911, contained two eggs of this Honey-eater and one Cuckoo egg similar to those found in the nests of *Glyciphila modesta*. Stomach contents, stems and seeds of berries." He later added "Was common both in open forest and scrub. A few were in scrub along the Archer River."

THE BIRDS OF AUSTRALIA.

Campbell, dealing with a collection of birds from the Torres Straits Islands, has written : "Two ♂♂, one ♀. *P. chrysotis (lewinii)* and this distinct species, both being found in Northern Queensland, and similar in size and coloration, are sometimes confusing to field observers, but the examination of cabinet skins shows that *P. notata*, besides being smaller, is lighter coloured and more yellowish on the under-surface than *P. chrysotis*. As expected, *notata* from the luxuriant scrubs of the mainland is a trifle darker than these Torres Straits skins. This and the Lesser Spotted Honey-eater were two of the commonest species on the island, and both were observed breeding in the paper barks."

Though so little has been written regarding the habits of this species, there is a lot of literature in connection with this and the next species as regards their extra-limital distribution and forms.

When I made up my "Reference List" in 1912 I subordinated the Australian *P. notata* to the New Guinea *P. analoga* as a subspecies and added another form, thus :

Ptilotis analoga notata Gould.

North Queensland (Cape York).

Ptilotis analoga mixta Mathews.

"Differs from *P. a. notata* in being darker above and below, especially noticeable on the vent. Johnston River, N.Q."

North Queensland (Cairns District).

In my 1913 "List" I maintained this, with the transference into the genus *Ptilotina*, as :

Ptilotina analoga notata (Gould).

Ptilotina analoga mixta (Mathews).

GENUS—MICROPTILOTIS.

MICROPTILOTIS Mathews, Austral Avian Record,
Vol. I., pt. 5, p. 116, Dec. 24th, 1912. Type
(by original designation).. .. *Ptilotis gracilis* Gould.

I WROTE "Differs from *Ptilotis* in its absolutely longer though more slender bill, while the wing is shorter and the legs and feet weaker."

Although this genus has been confused with the preceding, it can be easily distinguished if careful comparison be made. The birds are smaller with comparatively longer weaker bills, shorter wings and weaker feet.

The bill is more curved, more compressed, tip more depressed, the anterior edges of the mandibles finely serrate, more noticeable in some specimens than in others, but always more marked than in the preceding genus, where any serrations are scarcely noticeable; the bill is longer than the head, the under mandible more slender, the gonys not so marked and comparatively longer. The first primary of the wing is half the length of the second, which is longer than the secondaries, and the third primary is longer than the seventh.

The tail is comparatively shorter, and the legs shorter, and the feet weaker, the front of the tarsus obscurely scutellate.

Order PASSERIFORMES.

No, 662.

Family MELITHREPTIDÆ.

MICROPTILOTTIS GRACILIS.

LITTLE YELLOW-SPOTTED HONEY-EATER.

(PLATE 528.)

PTILOTTIS GRACILIS Gould, Proc. Zool. Soc. (Lond.), 1866, p. 217, Oct. 1st : Cape York, Queensland.

Ptilotis gracilis Gould, Proc. Zool. Soc. (Lond.), 1866, p. 217 ; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 189, 1878 ; *id.*, Tab. List Austr. Birds, pp. 12, 30, 1888 ; Le Souëf, Ibis, 1898, p. 56, pl. 1 ; Hall, Key Birds Austr., p. 41, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 384, 1901 ; North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 110, 1907 ; Mathews, Handl. Birds Austral., p. 95, 1908 ; Macgillivray, Emu, Vol. X., p. 232, 1910 ; Barnard, *ib.*, Vol. XI., p. 28, 1911 ; Macgillivray, *ib.*, Vol. XIII., p. 178, 1914 ; Campbell and Barnard, *ib.*, Vol. XVII., p. 33, 1917 ; Macgillivray, *ib.*, p. 205, 1918 ; Campbell, *ib.*, Vol. XX., p. 64, pl. v., 1920.

Ptilotis gracilis gracilis Mathews, Nov. Zool., Vol. XVIII., p. 403, Jan. 31st, 1912.

Ptilotis gracilis imitatrix Mathews, *ib.* : Cairns, North Queensland.

Microptilotis gracilis gracilis Mathews, List Birds Austr., p. 272, 1913.

Microptilotis gracilis imitatrix Mathews, *ib.*

DISTRIBUTION. North Queensland only, from Cape York to Cairns.

Adult male. General colour of the upper-surface dark olive-green, including the top of the head, nape, hind-neck, sides of neck, back, rump, upper tail-coverts, scapulars, and upper wing-coverts ; flight-quills dark brown fringed on the outer webs with bronze-green and margined on the inner ones with whitish ; tail pale bronze-brown ; lores and eye-region blackish ; ear-coverts lemon-yellow ; an indication of a pale line below the eye ; under-surface pale olive-green more or less tinged with grey on the abdomen, flanks, and under tail-coverts ; thighs dusky-brown ; axillaries pale sulphur-yellow ; under wing-coverts pale buff ; under-surface of flight-quills dark brown with yellowish margins ; lower aspect of tail paler than its upper-surface and having white shafts to the feathers. Eyes brown, bill and feet black. Total length 145 mm. ; culmen 18, wing 77, tail 62, tarsus 21. Figured. Collected at Cairns, North Queensland, in October 1909, and is the type of *P. g. imitatrix*.

Adult female similar to the adult male.

Eggs. Two eggs usually form the clutch. A clutch of two eggs taken at Lockerbie, Cape York, North Queensland, on the 17th of October, 1910, is of a beautiful salmon-pink, marked (almost entirely at the larger end of each egg) with rich chestnut and purplish-slate spots. 19 × 13 mm.

LITTLE YELLOW-SPOTTED HONEY-EATER.

A clutch of two eggs of the more southern form taken near Cairns, North Queensland, on the 3rd of November, 1896, measure 18-20 by 14-15 mm.

Nest. A cup-shaped structure, composed of shreds of bark, frequently covered with green moss, and lined with wild cotton and a silky substance collected from plants. Dimensions over all : about 3 inches across by 2 to 3 inches deep ; inside $2\frac{1}{2}$ inches across by nearly $1\frac{1}{2}$ inches deep. Nest generally placed from 8 to 14 feet up from the ground.

Breeding-months. October to January.

MACGILLIVRAY mentioned this bird from Cape York, whence it was described by Gould, but without giving any details as to its habits.

Barnard then wrote : " Inhabits forest country adjacent to scrubs. Found breeding in forest ; two nests and clutches of eggs were taken."

Macgillivray's next account reads " This small Honey-eater was plentiful at Cape York in the open forest, but only occasional in the scrub. Stomach contents small berries," and later added only : " Lesser Yellow-spotted Honey-eaters were very common in the trees about our camp, and especially so after rain, which drives them out of the scrub. They are fairly plentiful on the Archer River. Mr. McLennan found a pair building in a *Melaleuca* overhanging the river. The eggs of this Honey-eater are beautifully and richly coloured."

Campbell and Barnard wrote about the birds of the Cardwell District, North Queensland : " The smaller Yellow-spotted Honey-eater was frequently noticed. It sometimes came into gardens after the flowering orange-trees, and was generally amongst the honey-eating birds that gathered about the flowering trees of the scrub. A nest was secured at the edge of a scrub in a low tree. It contained a pair of fresh eggs and was lined with a snow-white downy material, the same as that used by the larger Yellow-eared Honey-eater (*P. chrysotis*). We witnessed one of these Honey-eaters attacking a large spider upon its web. The bird made several attempts to take the spider, which always fenced with its legs and kept the bird at bay. After several more attempts at capture by the bird while on the wing, without success, the doubtful morsel was abandoned."

When he received birds from the Torres Straits Islands for study Campbell wrote : " One ♂, one ♀. A typical pair, forming useful material and agreeing with skins from the Cape York mainland. Birds Mr. H. G. Barnard and I obtained in Cardwell Scrubs are apparently slightly darker above and lighter on the under-surface, especially the throat—the result of different environment, doubtless—but there is not the slightest ornithological or other need to emphasize trinomially such natural variation in plumage." Since this was written Campbell has described a number of subspecies on the same grounds as he here depreciated, so that we are in agreement upon this subject at last.

THE BIRDS OF AUSTRALIA.

In 1912 in my "Reference List" I separated

Ptilotis gracilis gracilis Gould.

North Queensland (Cape York).

Ptilotis gracilis imitatrix Mathews.

"Differs from *P. g. gracilis* in its much darker green coloration above and much greener under-surface, especially on the flanks, and also in its larger size: wing 75-77 mm.; type (*P. g. gracilis*) 70 mm. Cairns, N.Q."

North Queensland (Cairns District.).

In 1913 I placed them in my "List" in the genus *Microptilotis* and still admitted the two subspecies, and it will be noted that Campbell states they are easily separable.

GENUS—PARAPTILOTIS.

PARAPTILOTIS Mathews, Nov. Zool., Vol. XVIII.,
p. 414, Jan. 31st, 1912. Type (by monotypy) *Ptilotis fusca* Gould, i.e.,
Meliphaga fusca Gould.

WHEN I prepared my "Reference List" in 1912 I was employing huge unnatural genera, but when I examined the extraordinary accumulation of species classed as "*Ptilotis*," though I allowed the usage, I marked my disapproval of such a grouping by introducing a few new generic terms, of which the present is one.

The birds are medium Honey-eaters with short stout bills, long wings, long tails, and slender legs and very small feet.

The bill is short and stout, shorter than the head, more triangular than in the preceding genera and less compressed; the linear nostrils almost half the length of the bill; the under mandible stout, the gonys marked but short, the interramal space triangular, narrow and feathered.

The first primary is short and narrow, less than half the length of the second, which is much longer than the secondaries; the third, fourth and fifth primaries subequal and longest.

The legs are slender, scutes being obscurely seen on the front of the tarsus, the feet are small, the hind-toe and claw longer than the middle toe and claw.

Key to the Species.

Lores black	..	..	..	..	..	<i>P. chrysops</i>
Lores not black	..	..	..	..	..	<i>P. fusca</i>

Order PASSERIFORMES.

No. 663.

Family MELITHREPTIDÆ.

PARAPTILOTIS FUSCA.

FUSCOUS HONEY-EATER.

(PLATE 529.)

MELIPHAGA FUSCA Gould, Synops. Birds Austr., pt. II., pl. (26), April 1st, 1837: New South Wales.

[*Certhia chrysotis* Latham, Index. Ornith. Suppl., p. xxxviii., 1801 (after May 30th). Founded on Watling Drawing No. 117=Sydney, New South Wales; Mathews, Austral Av. Rec., Vol. V., pts. 2-3, p. 73, 1923.

Certhia cana Bechstein, Kurze Uebers Vögel, p. 197, 1811 (pref. April 12th, 1810): Sydney.

Certhia xanthotis Shaw, Gen. Zool., Vol. VIII., p. 244 (pt. I.), 1812: Sydney.]

Meliphaga fusca Gould, Synops. Birds Austr., pt. II., pl. (26), April 1st, 1837: Sydney; Wolstenholme, Emu, Vol. XXII., p. 154, 1912.

Ptilotis fusca Gould, Birds Austr., pt. IV. (Vol. IV., pl 44), Sept. 1st, 1841; *id.*, Handb. Birds Austr., Vol. I., p. 520, 1865; Ramsay, Proc. Zool. Soc. (Lond.), 1875, p. 596, 1876; *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 189, 1878; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 229, 1884; Ramsay, Tab. List Austr. Birds, p. 13, 1888; Hall, Key Birds Austr., p. 41, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 385, 1901; North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 114, 1907; Hill, Emu, Vol. VII., p. 19, 1907 (Vic.); Mathews, Handl. Birds Austral., p. 95, 1908; E. Barnard, Emu, Vol. XI., p. 125, 1911 (Q.); Cleland, *ib.*, Vol. XII., p. 16, 1912 (Food); Campbell and Barnard, *ib.*, Vol. XVII., p. 33, 1917 (N.Q.); Hays, *ib.*, Vol. XX., p. 34, 1920 (N.S.W.).

Ptilotis minuta Pelzeln, Eastern Freg. Novara, Birds, p. 56, 1865: Sydney, New South Wales.

Ptilotis fusca fusca Mathews, Nov. Zool., Vol. XVIII., p. 404, Jan. 31st, 1912.

Ptilotis fusca dingi Mathews, *ib.*: (Murray Flats) South Australia; *id.*, Austr. Av. Rec., Vol. I., p. 62, 1912.

Ptilotis fusca dawsoni Mathews, *ib.*; Dawson River, Queensland; *id.*, Austr. Av. Rec., Vol. I., p. 62, 1912.

Paraptilotis fusca fusca Mathews, List Birds Austr., p. 272, 1913.

Paraptilotis fusca dawsoni Mathews, *ib.*

Paraptilotis fusca dingi Mathews, *ib.*

DISTRIBUTION. Eastern Australia from Queensland to South Australia.

Adult female. General colour of the upper-surface olive-brown, including the top of the head, sides of face, hind-neck, sides of neck, back, rump, upper tail-coverts, scapulars, and upper wing-coverts; bastard-wing, primary-coverts, and flight-quills dark



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Witherby & Co

PARAPTILOTIS FUSCA

(FUSCOUS HONEY-EATER)

PARAPTILOTIS CHRYSOPS

(YELLOW-FACED HONEY-EATER)

BATCHIA, MISIRIV NEBRODSE

FUSCOUS HONEY-EATER.

brown fringed on the outer webs with yellowish-green—brighter on the outer webs of the last—which have the inner ones margined with buffy-white; tail-feathers bronze-brown fringed with green on the outer webs; lores somewhat darker than the crown; eye-ring black; ear-coverts blackish at the base tipped with lemon-yellow; chin and throat olive-brown tinged with yellow; fore-neck and breast dull fawn-colour like the sides of the body; abdomen, vent, and under tail-coverts cream-white; thighs clay-brown; axillaries and under wing-coverts buff; under-surface of flight-quills dark brown with buff margins; lower aspect of tail greyish-brown. Eyes dark brown, feet brownish, bill blackish with yellow base, gape and throat yellow, eyelids bright yellow. Total length 153 mm.; culmen 12, wing 78, tail 65, tarsus 19. Figured. Collected on the Murray Flats, South Australia, on the 30th of May, 1911, and is the type of *P. f. dingi*.

Adult male similar to the adult female.

Adult female. General colour of the upper-surface pale earth-brown, including the top of the head, sides of face, sides of neck, hind-neck, back, rump, upper tail-coverts, scapulars, upper wing-coverts, and innermost secondaries; outer webs of flight-quills greenish-yellow, the inner ones dark brown margined with white; tail pale brown margined on the outer webs with greenish-yellow, some of the feathers narrowly fringed with white; lores and eye-ring blackish; ear-coverts pale sulphur-yellow; chin, throat, and breast similar to the top of the head but paler and slightly tinged with yellow; abdomen, sides of body, thighs, and under tail-coverts buffy-white; axillaries, under wing-coverts, and inner margins of quills below pale buff, remainder of quill-lining dark brown; lower aspect of tail pale greyish-brown. Eyes brown, feet and bill black. Total length 150 mm.; culmen 10, wing 72, tail 59, tarsus 19. Collected at Coomoboolaroo, Dawson River, Mid-Queensland, on the 29th of August, 1909, and is the type of *P. f. dawsoni*.

Eggs. Two to three eggs usually form the clutch. A clutch of three eggs taken near South Grafton, Clarence River, New South Wales, on the 9th of September, 1894, is of a rich salmon ground-colour, well spotted, particularly at the larger ends, with reddish-brown and purplish-brown. Rather swollen ovals in shape; surface of shell fine, and rather glossy. 19–20 by 14 mm.

Nest. A neat cup-shaped structure, composed chiefly of strips of bark, bound and matted together with cobwebs and a cotton-like substance; usually it is very compactly put together. Lined with hair, fine roots, and grass, and often with a silk-like vegetable substance. Situated in a small tree or bush, at heights varying from 12 to 20 feet from the ground. Dimensions over all: $2\frac{1}{2}$ to nearly 3 inches across by $2\frac{1}{2}$ deep; inside egg-cavity: $1\frac{1}{2}$ to nearly 2 inches across by $1\frac{1}{2}$ inches deep.

Eggs. A clutch of two eggs of the northern form taken at Duaringa, near Rockhampton, Queensland, on the 26th of August, 1895, measures 18 by 13 mm.

Breeding-months. July to December.

GOULD described this species before he went to Australia, but his were the first field observations, though scanty, thus: "This species of Honey-eater, which is not distinguished by any brilliancy in its plumage, is abundantly dispersed over the thick brushes of New South Wales; and in the months of August and September, when the beautiful *Tecoma* is in blossom, it may be seen flitting about among the thick clusters of the pendent flowers in search of insects, which are sometimes captured while on the wing, but more generally

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extracted from the tubular florets. I observed nothing remarkable in its economy or in which it differed from the other members of the group. Like them, it is generally found among the flowers and the most leafy branches of the trees. I have never seen it on the plains, nor have I received specimens from any other part of Australia than New South Wales, where it is to be met with both in winter and summer."

Mr. L. G. Chandler has written me from Victoria: "Milton is the only district in which I have met with this bird. They do not appear to be plentiful there, but still are well distributed. They are fond of insects and often spend much of their time in pursuit of them. Several times I have noticed them when catching insects, fly close to the ground to capture them. Flying from a low stick they secure an insect and return again to perch close to the ground, and sometimes on the ground. On June 8th, 1908, I noticed a bird bathing in a pool of water at Milton. It stood in the water and splashed the surface with its wings."

G. F. Hill wrote from the Ararat District, Victoria: "This is one of the few Honey-eaters which remain in the district throughout the year."

A note by E. D. Barnard from Kurrajong, Gladstone (Q.), is worth quoting: "I notice some smaller birds have a very keen eye and a good memory for their enemies, the Hawk tribe. Some time ago I shot a Sparrow-Hawk which was making itself a nuisance in the poultry yard, and, not making good work of the skin, threw it out on to a rubbish heap where the winter's pruning had been deposited. It fell down among the branches for some distance, almost out of sight; but it was not long before it was discovered by some Fuscous Honey-eaters (*Ptilotis fusca*), which assembled round the Hawk-skin, making a great fuss over their discovery. That was, at the least, two months ago, and I think that almost every day, and sometimes three or four times a day, those half-dozen cheeky little Honey-eaters go right down in the heap of twigs and sit close beside and scold the unresponsive heap of feathers. Their hatred seems to be confined to themselves, for no other birds seem to take any interest in their actions."

Hays, writing from Bundarra, New South Wales, in 1919, notes "This desertion of nests (all ready for egg-laying) was found also with the Fuscous Honey-eater (*Ptilotis fusca*). Of twenty-two nests found, only three hatched out. The remainder, as far as could be ascertained, never had eggs laid in them; but, as most of these birds build very high, I could not be sure, though I am certain no others hatched out. Most other Honey-eaters here have not attempted to build yet, as the drought is still in full force (31st October, 1919)."

Campbell and Barnard, writing about Cardwell birds, observed: "These

FUSCOUS HONEY-EATER.

birds were always observed in forest country, and frequented the tall trees. Although not typical, this bird most resembles *P. fusca*, with its dark-coloured bill and breast, while its habits and call are identical with that bird's. Possibly it is the bird that Mathews has recorded from Cairns as *Ptilotula flavescens subgermana*, which is another species." The absurdity and ambiguity of the last sentence needs no comment. I cannot decide whether Campbell meant he did not know what the bird was he had in view.

I separated three subspecies in my "Reference List," in 1912, thus :

Ptilotis fusca fusca (Gould).

New South Wales.

Ptilotis fusca dawsoni Mathews.

"Differs from *P. f. fusca* in its smaller size : wing 72 mm. Dawson River, Queensland."

Queensland.

Ptilotis fusca dingi Mathews.

"Differs from *P. f. fusca* in its much paler coloration above and below. (Murray Flats) South Australia.

South Australia, Victoria.

In my 1913 "List" I, still admitting these, ranged them under the genus *Paraptilotis*, and it will be noted that Campbell states the Cairns bird is not typical, but I am not certain that he was examining this species as the other bird mentioned by him in the same connection is so different.

The names of the forms admitted will now be

Paraptilotis fusca fusca (Gould).

Paraptilotis fusca dingi (Mathews).

Paraptilotis fusca dawsoni (Mathews).

Order PASSERIFORMES.

No. 664.

Family MELITHREPTIDÆ.

PARAPTILOTIS CHRYSOPS.

YELLOW-FACED HONEY-EATER.

(PLATE 529.)

SYLVIA CHRYSOPS Latham, Index Ornith. Suppl., p. liv., (after May 30th) 1801: New South Wales, based on Watling Drawing No. 134.

Sylvia chrysops Latham, Index Ornith. Suppl., p. liv., 1801.

Black-checked Warbler Latham, Gen. Synops. Birds, Suppl. II., p. 248, 1801.

Melithreptus gilvicapillus Vieillot, Nouv. Dict. d'Hist. Nat., Vol. XIV., p. 329, Sept. 13th, 1817: "Nouvelle Hollande," i.e., New South Wales.

Meliphaga chrysops Vigors and Horsfield, Trans. Linn Soc. (Lond.), Vol. XV., p. 315, 1827.

Ptilotis chrysops Gould, Synops. Birds Austr., pt. iv., pl. (26), 1838; *id.*, Birds Austr., pt. xxi. (Vol. IV., pl. 45), March 1st, 1846; *id.*, Handb. Birds Austr., Vol. I., p. 521, 1865; Ramsay, Proc. Zool. Soc. (Lond.), 1875, p. 596, 1876; *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 189, 1878; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 236, 1884; Ramsay, Tab. List Austr. Birds, p. 13, 1888; Hall, Key Birds Austr., p. 42, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 392, 1901; North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 111, 1907; Hill, Emu, Vol. VII., p. 19, 1907 (Vic.); Mathews, Handl. Birds Austral., p. 96, 1908; Cleland, Emu, Vol. IX., p. 225, 1910 (Food); Maddison, *ib.*, p. 256 (Vic.); Ingle, *ib.*, Vol. X., p. 124 (Vic.); Broadbent, *ib.*, p. 238, 1910 (N.Q.); Dove, *ib.*, Vol. XI., p. 42, 1911 (Vic.); Agnew, *ib.*, Vol. XIII., p. 96, 1913 (Q.); S. A. White, *ib.*, Vol. XIV., p. 143, 1915 (Mallacoota); Le Souëf and Macpherson, *ib.*, Vol. XX., p. 90, 1920 (N.S.W.).

Meliphaga trivirgata "Verr." Gray, Handl. Gen. Sp. Birds, B.M., Vol. I., p. 156, 1869, as synonym of *Sylvia chrysops* Latham.

Ptilotis chrysops chrysops Mathews, Nov. Zool., Vol. XVIII., p. 406, Jan. 31st, 1912.

Ptilotis chrysops barroui Mathews, *ib.*: Cairns, North Queensland.

Ptilotis chrysops beaconsfieldi Mathews, *ib.*, p. 407: (Beaconsfield) Victoria.

Ptilotis subchrysops Campbell, Emu, Vol. XII., pt. i., p. 19, July 1st, 1912 (ex Bull. Roy. Austr. Orn. Union, No. 3, May 21st, 1912 (?) unpublished): Bellenden Ker, Queensland; H. L. White, *ib.*, p. 45 (Eggs).

Ptilotis chrysops samucli Mathews, Austral Avian Record, Vol. I., pt. 4, p. 99, Sept. 18th, 1912: 50 miles north of Adelaide, South Australia.

Paraptilotis chrysops chrysops Mathews, List Birds Austr., p. 272, 1913.

Paraptilotis chrysops barroni Mathews, *ib.*, p. 273.

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Paraptilotis chrysops beaconsfieldi Mathews, *ib.*; Belcher, Birds Geelong, p. 335, 1914.

Paraptilotis chrysops samueli Mathews, List Birds Austr., p. 273.

Ptilotis barroni Campbell and Barnard, Emu, Vol. XVII., p. 33, 1917 (N.Q.).

DISTRIBUTION. Eastern Australia from Cairns, North Queensland, to Eastern South Australia.

Adult female. General colour of the upper-surface olive-brown, including the top of the head, hind-neck, sides of neck, entire back, upper tail-coverts, scapulars, wings and tail; median and greater upper wing-coverts rather paler at the tips, which indicates a double wing-bar; flight-quills dark brown fringed with dull green on the outer webs and margined with buffy-white on the inner ones; tail uniform pale brown; lores and feathers above and behind the eye black; space in front and below the eye yellow, extending on to the ear-coverts where it becomes almost white; an indicated line of white on the sides of the crown; moustacial streak black, which is more or less fringed with white on the sides of the throat; chin, throat, fore-neck, breast, sides of breast, and sides of body dusky-grey, becoming paler and inclining to whitish on the abdomen and under tail-coverts; thighs rust-brown; axillaries grey; under wing-coverts pale buff; under-surface of flight-quills hair-brown with pale buff margins; lower aspect of tail pale greyish-brown with white shafts to the feathers. Eyes brown, feet and bill black. Total length 152 mm.; culmen 11, wing 75, tail 64, tarsus 21. Figured. Collected at Olinda, Victoria, on the 10th of September, 1911.

Adult male similar to the adult female.

Male, immature. General colour of the upper-surface dark ochreous-brown, including the top of the head, hind-neck, sides of neck, back, rump, scapulars, and lesser upper wing-coverts; remainder of wing-coverts and outer aspect of flight-quills bronze-green, inner webs of the last dark brown margined with buff; upper tail-coverts inclining to coffee-brown; tail-feathers pale brown rather paler on the inner margins and slightly fringed with green on the outer ones; lores, a line over the eye, which extends along the sides of the crown, black; a patch of yellow behind the eye; moustacial streak and ear-coverts black, the latter tipped with white; chin and throat grey; fore-neck, breast, and sides of body ochreous-brown; middle of abdomen paler and inclining to whitish; thighs, under tail-coverts, axillaries, under wing-coverts, and inner margins of flight-quills below buff, remainder of quill-lining dark brown; lower aspect of tail pale brown with white shafts. Eyes brown, feet slate, bill horn. Collected at Olinda, Victoria, on the 15th of February, 1913.

Juvenile. General colour of the upper-surface ochreous-brown, including the top of the head, hind-neck, back, rump, upper tail-coverts, and upper wing-coverts; flight-quills dark brown margined with yellowish-green on the outer webs; tail pale hair-brown; lores like the crown; moustacial streak black; ear-coverts lemon-yellow; chin and throat greyish-white; remainder of the under-surface dull ochreous-buff including the breast, abdomen, sides of body, thighs, and under tail-coverts; under wing-coverts pale buff like the inner margins of the flight-quills below, remainder of quill-lining pale hair-brown; lower aspect of tail similar to its upper-surface. Collected at Box Hill, Victoria, on the 1st of December, 1895.

Eggs. Two to three eggs form the clutch. A clutch of two eggs taken at the Lane Cove River, near Sydney, New South Wales, on the 5th of September, 1915, is of a beautiful pinkish-buff, spotted and speckled (particularly at the larger ends) with rich reddish-chestnut and purplish-grey. Swollen ovals in shape; surface of shell fine and rather glossy. 19 by 13-14 mm.

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Nest. A handsome cup-shaped rather deep structure, composed of bark, cobwebs and moss well worked together, and lined with grass and small roots. Dimensions over all: 3 inches to $3\frac{1}{4}$ inches across by $2\frac{1}{2}$ to $2\frac{3}{4}$ inches deep; inside, 2 inches to $2\frac{1}{4}$ inches across by 2 to $2\frac{1}{4}$ inches deep.

Breeding-months. July to January.

The earliest field-notes appear to be those given by Gould, which are necessarily short on account of the sameness of the habits of members of this group. Thus Gould wrote: "May be regarded as one of the commonest species of Honey-eaters inhabiting the colonies of New South Wales and South Australia, its distribution over those countries being almost universal. On reference to my journal I find that it was equally abundant in the gardens of Sydney, in the brushes near the coast, in the district of the Upper Hunter, and on the Liverpool range; and that in South Australia it was quite as numerous in the mangrove thickets on the coast as in the interior of the country. It is very animated and sprightly in its actions, and during the months of spring and summer is constantly engaged in singing, its melodious song being poured forth while the bird is perched on the topmost branches of the trees."

On the Watling drawing upon which the first description was based appears a note: "It has a brush tongue, and is a lively little bird; it lives a good deal on honey."

This note was adapted by Latham who wrote: "Is a lively species, and is supposed to live principally on honey, as those birds whose tongues are jagged at the end are found to do."

Mr. T. P. Austin has written me from Cobbora, New South Wales: "Not at all a common species here, in fact it is rather rare and what few there are about are more often heard than seen. They are only found in the low scrubby country in the heavy forest, its cheerful notes suddenly ringing out from some low scrub near the ground. Only twice have I found it breeding here, the dates being September 17th and November 16th."

Mr. F. E. Howe writes from Victoria: "This very lively bird is exceedingly plentiful all through the district. It is frequently met with in the open timber, but it usually prefers the thick tea-tree scrubs. It is rarely far away from water and here they delight to place their mossy nests in some overhanging bough. The eggs are generally three and it is not uncommon to find the egg of *Cuculus inornatus* accompanying them, and in this case only one or two eggs of the foster parent. The breeding-season extends from September to January and they rear two broods. Both sexes help to build the nest and also to feed the young."

Mr. L. G. Chandler also wrote from Victoria: "This species becomes troublesome to orchardists when the fruit is ripening, but for the remainder of

YELLOW-FACED HONEY-EATER.

the year their food is chiefly insects ; I have always found the nest close to the ground. The birds are common throughout the year, being met with at any time in the Ringwood and Frankston districts."

Ingle has recorded from South Gippsland : "The common Honey-eater of the district. Arrives during August, starts to breed early in October, and is gone by the middle of May."

H. Stuart Dove has also noted : "While staying on the Tyldesley River, East Gippsland, I found a nest of this species in a slender tea-tree about 12 feet from the ground ; it contained (21st September) two young in light grey down, eyes not yet open. The parents came close to my head while I was examining the nest, making a 'rut-ut-utting' noise with the wings while flying, in the same manner as the Spinebill and others of the *Meliphagidæ*."

Captain S. A. White, writing of the Birds of Mallacoota, Victoria, observed : "Numerous ; they seemed to take the place of *P. penicillata*, which they resemble much in habits. They were nesting in the tea-tree. Their short but melodious note was heard on every side in the early morning and evening."

Le Souëf and Macpherson, dealing with the birds of Sydney, N.S.W., whence this bird was first described, wrote : "The 'Chickup' is numerous in Sydney wherever there are eucalyptus trees, but it sometimes invades the flower beds. It takes the place of the 'Greenie' (*P. penicillata*) so common round Melbourne."

Campbell and Barnard, in connection with the birds of the Rockingham Bay District, allowed as a species *Ptilotis barroni*, writing : "Although we heard the familiar '*chrysops*' call along the Kirrama Creek, on the table-land, when we procured skins we found that they were smaller, decidedly darker, and had longer bills than the southern forms. The eggs were also smaller, but characteristic. A nest found suspended in a *Casuarina* (27/10/16) was outwardly composed of green moss and portions of insect cocoons and web and was well lined with fine rootlets and a few *Casuarina* needles. Dimensions over all, 3 inches across by 2 inches in depth."

There appears again to be some confusion with the Cairns birds as will be seen below.

In my "Reference List" in 1912 I separated :

Ptilotis chrysops chrysops (Latham).

New South Wales.

Ptilotis chrysops barroni Mathews.

"Differs from *P. chrysops* in its paler coloration above and below, and with the green edgings to the primaries indistinct and dull. Cairns."

North Queensland.

Ptilotis chrysops beaconsfieldi Mathews.

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"Differs from *P. c. chrysops* in its greyish coloration, but darker than *P. c. barroni* and paler underneath. (Beaconsfield) Victoria."

Victoria.

A little later Campbell wrote: "Attention has been more than once drawn to the smaller variety of *P. chrysops* frequenting the coastal scrubs of Northern Queensland, notably the Cooktown district. Although northern and southern birds are similar except for size, it is feasible to suppose that *P. chrysops*, frequenting, say, the rocky Grampian Range in Victoria, is not identical with the bird inhabiting the luxuriant scrubs of the Bellenden Ker Range in tropical Queensland. No doubt ornithological students will agree to separate the northern bird under the suggestive name of *subchrysops*, with a wing measurement of 2·9 inches, as against 3·2 inches for that of a typical *chrysops*."

It will be noted that the ONLY difference noted by Campbell as worthy of distinction was a shorter wing, the birds being considered otherwise alike. It is probable that Campbell used for comparison the Victorian bird which I considered similar in coloration; but I regarded both as paler than the typical subspecies.

A little later I distinguished

Ptilotis chrysops samueli.

"Differs from *P. c. beaconsfieldi* in its much darker coloration above and below. Ranges fifty miles north of Adelaide, S.A."

South Australia.

With their transference to the genus *Paraptilotis* these four subspecies (*subchrysops* being regarded as a synonym of *barroni*) were admitted in my 1913 "List," and nothing has since been added.

GENUS DOROTHINA.

DOROTHINA Mathews, Austral Avian Record,
 Vol. II., pt. 5, p. 111, Sept. 24th, 1914. Type
 (by original designation) *Meliphaga lewinii* Swainson.
Meliphaga Lewin, Birds New Holland, 1808.
 Type (by subsequent designation Gray 1840,
 List Genera Birds, p. 15) *Meliphaga chrysotis* Lewin
 = *Meliphaga lewinii* Swainson.

Not—
Melophagus Latreille in Sonnini's Buffon, Insect., Vol. III., p. 466, 1802.

Ptilotis Swainson, Classif. Birds, Vol. II., p. 326,
 July 1837. Type (by subsequent designation
 Salvadori, Ornith. Pap. e Mol., Vol. 2, p. 326,
 1881) *Meliphaga chrysotis*
 = *Meliphaga lewinii* Swainson.

Not—
Ptilotus Fischer, Zoognosia, ed. 3, Vol. I., p 15, 1813.

I INTRODUCED *Dorothina* for the species *M. lewini* Swainson as the generic names *Meliphaga* and *Ptilotis* previously in use were both invalid as above cited, and hereafter discussed.

The species are larger than the preceding but of the same style, with long bills, long wings, long tail and short legs and feet.

The bill is long and stout, like that of *Ptilotina*, but the gonys longer and not so marked. The head as in that genus has a very flattened appearance.

The wing has the first primary short, less than half the length of the second, which is equalled by the secondaries; the third, fourth, fifth and sixth primaries subequal and longest.

The tail is long and square.

The legs are short, the anterior face of the tarsus obscurely scutellate, sometimes the scutes are easily seen; the feet small, the hind-toe and claw longer than the middle toe and claw, the outer and inner toes subequal and with claws about equal to the middle toe-claw, all anterior toes delicate and claws delicate and short.

The history of the generic names used for this group is a complex one, but it is necessary to incorporate the majority of the details here, though they have been already fully recorded by me elsewhere.

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Latham was not exactly a genus-splitter, though he introduced a few new generic names. He, however, indicated his belief in the necessity for more divisions and probably would have introduced more than he did had not Gmelin usurped his technical work and thus disappointed him in the publication of his scientific nomination of his birds.

However, Anderson, who was on Cook's Third Voyage was impressed with the peculiar nature of Australian birds and for the Honey-eaters proposed a new genus name in his MS. Some of this Manuscript is preserved in the British Museum (Natural History) and although only a few birds are named as new, the Honey-eaters are separated as a new genus.

The name selected was appropriate and may have been even suggested by Latham, or Latham accepted it as a good name. Recently the British Museum purchased a set of paintings that had belonged to Latham, and which were at the time under offer to myself, who had instigated their recovery. On these paintings Latham had written against many of the Honey-eaters the same generic name as used by Anderson in his MS. It was not considered wise to quote this MS. name, as it would have been only an additional useless one, as by this time it had been correctly introduced in another connection.

Recently, however, the study of a little book called *Ornithologia*, by J. Jennings, showed Latham had correctly introduced this name into his intended second edition of the *Index Ornithologicus*, and Jennings published it in connection with two species only, so that it has not been cited in the synonymy of Australian names. The name in question is *Anthophagus*, and the full account of Jennings' work is given in the *Austral Avian Record*, Vol. IV., No. 7, pp. 172-175, March 7th, 1922, where is quoted "The genus *Anthophagus* Lath. or Honey-eater consists of seventy species," and the type selected as *A. olivaceus* Lath., making it citable as a synonym of *Arachnothera*, and it is also preoccupied by *Anthophagus* published by Gravenhorst, *Coleopt. micr.*, p. 120, 1802.

I have included this item as of great historical interest, though hitherto unrecorded in literature.

The first published generic name is *Meliphaga* in Lewin's *Birds New Holland*, which appeared in 1808. Whose invention this is cannot now be traced, but it seems to have been added at this end and may not even have been Lewin's suggestion. That does not matter in any way, but is here noted as four species are named *Meliphaga*, and a cut of the bill and tongue appears on one plate which does not appear on the plate as printed in Sydney.

The usage of Lewin's name has been detailed in the *Austral Avian Record*, Vol. I., pt. 8, p. 184, March 20th, 1913, where I showed that it was given as a general name for all Honey-eaters and was so used by the earliest ornithologists, who, however, split off new genera almost immediately. Vieillot introduced

DOROTHINA.

Melithreptus and this is preserved for a distinct group, but probably it was intended to cover all Honey-eaters, as Vieillot thus used it later.

Swainson cited as type of "*Meliphagi*" (*sic*) a species which was not mentioned by Lewin, using the name of Honey-eaters generally, and afterwards proposed two new genera for two of the species named by Lewin. Vigors and Horsfield used Swainson's type selection, and generically separated three of Lewin's species, leaving only one unaccounted for. By the principle of elimination, which is now not used, but is sometimes confirmatory evidence of practical usage, the unnamed (generically) species would be regarded as the type of the genus *Meliphaga*.

A further subdivision of the Honey-eaters occurred when Swainson published his "Classification of Birds" in 1837, when he continued *Meliphaga* (spelt correctly this time) with a type not in Lewin's group and introduced *Ptilotis* for the Honey-eater figured by Lewin on pl. 5, which had otherwise no generic name, and then separated another of Lewin's species from Vigors and Horsfield's genus.

It may be as well to digest the troubles of the Lewin species, thus:

Meliphaga phrygia Lewin 1808 = *Anthochaera* Vigors and Horsfield =
type of *Zanthomiza* Swainson 1837.

Meliphaga cyanops Lewin 1808 = type of *Entomyzon* Swainson 1825 =
Tropidorhynchus Vigors and Horsfield.

Meliphaga chrysotis Lewin 1808 = type of *Ptilotis* Swainson 1837.

Meliphaga chrysocephala Lewin 1808 = type of *Sericulus* Swainson 1825.

Thus all the species had been made types of new genera and *Meliphaga* transferred to another group altogether.

G. R. Gray in the preparation of his "List Genera Birds" in 1840 recognised the state of affairs and therefore proposed a new name for the *Meliphaga* Swainson and Auct., and selected as type of *Meliphaga* Lewin the species *chrysotis* Lewin, which was absolutely in order and was the only possible selection on the facts as above cited.

In his next edition Gray, however, probably influenced by Strickland, recorded that on examination of the original issue of Lewin he found the description of the genus and cuts of the bill and tongue in connection with *M. phrygia*, and therefore decided that Lewin must have founded his genus on that species. As above noted, the figures of the bill and tongue were added in London and the generic name and description also here added so that we have no knowledge of Lewin's intention. However, Gray's later usage has been followed until quite recently, but is not now acceptable.

In the paper quoted, therefore, I proposed to use *Meliphaga* Lewin for the species commonly known as *Ptilotis*, as under the generally accepted Rules

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the latter name was invalid as *Ptilotus* had been previously proposed by Fischer, and in this case both words were prepared from the same basis and with the same meaning. I used *Meliphaga* in my 1913 "List" but unfortunately it proved to be in exactly the same case, *Melophagus* having been introduced by Latreille in 1802. There has been some discussion about such cases, but it is obvious that one cannot have half a dozen names, derived from the same basis, only differing in a single letter, without inviting confusion; thus *Melliphaga* and *Mellithreptus* and *Melithreptes* might be advanced as available, with many other variants which could be introduced. The words must have the same derivation before they can be considered invalid, as in the above instances, but if similar looking words have different derivations they are admissible, as *Hæmatops* and *Hæmatopus* are quite distinct. Errors of transliteration are amenable to emendation, and such words as *Melophagus* and *Ptilotis* come under this ruling as they may be amended into exactly the same form as the words *Meliphaga* and *Ptilotus* respectively, but no legitimate emendation whatever can make *Hæmatops* and *Hæmatopus* into the same thing, though *Centropus* and *Centropodus* are similar words, apparently distinct, but really from the same base and only differing in faulty transliteration.

NATIONAL MUSEUM MELBOURNE



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DOROTHEA ALBILINEATA
WHITE LINED HONEY-EATER)
DOROTHEA LEWINII
YELLOW EARED HONEY-EATER)

Witherby & Co

DOROTHINA LEWINII.

YELLOW-EARED HONEY-EATER.

(PLATE 530.)

MELIPHAGA (PTILOIS) LEWINII Swainson, Classif. Birds, Vol. II., p. 326, July 1st, 1837 :
New South Wales; new name for *Meliphaga chrysotis* Lewin, not *Certhia chrysotis*
Latham, which is referable to this genus.

Meliphaga chrysotis Lewin, Birds of New Holland, pl. 5, 1808 : New South Wales.

Meliphaga (Ptilotis) lewinii Swainson, Classif. Birds, Vol. II., p. 326, 1837; Mathews,
List Birds Austr., p. 273, 1913.

Ptilotis chrysotis Gould, Birds Austr., pt. XIX. (Vol. IV., pl. 32), June 1st, 1845.

Ptilotis lewinii Gould, Handb. Birds Austr., Vol. I., p. 503, 1865; Ramsay, Proc. Zool.
Soc. (Lond.), 1875, p. 595, 1876; *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 189,
1878; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 229, 1884; Ramsay, Tab. List
Austr. Birds, p. 12, 1888; Hall, Key Birds Austr., p. 41, 1899; Campbell, Nests
and Eggs Austr. Birds, Vol. I., p. 386, 1901; Godfrey, Emu, Vol. IV., p. 169, 1905
(Vic.); Broadbent, *ib.*, Vol. X., p. 238, 1910 (N.Q.); Campbell, *ib.*, Vol. XVII.,
p. 106, 1917 (N.Q.).

Ptilotis chrysotis Mathews, Handl. Birds Austral., p. 95, 1908; Cleland, Emu, Vol. XI.,
p. 91, 1911 (Food); S. A. White, *ib.*, Vol. XIV., p. 143, 1915 (Mallacoota);
Harvey Bros., *ib.*, Vol. XIX., p. 39, and pl., 1919 (Q.); S. A. White, *ib.*, p. 220,
1920 (Q.).

Ptilotis lewinii lewinii Mathews, Nov. Zool., Vol. XVIII., p. 404, Jan. 31st, 1912.

Ptilotis lewinii nea Mathews, *ib.* : (Dandenong) Victoria.

Ptilotis lewinii mab Mathews, *ib.* : Inkerman, Queensland.

Ptilotis lewinii ivi Mathews, *ib.* p. 405; Barron River, Queensland.

Meliphaga lewinii Mathews, List Birds Austr., p. 273, 1913.

Meliphaga lewinii lewinii Mathews, *ib.*

Meliphaga lewinii nea Mathews, *ib.*

Meliphaga lewinii mab Mathews, *ib.*

Meliphaga lewinii ivi Mathews, *ib.*

Dorothina lewini lewini Mathews, Austral Avian Record, Vol. II., p. 111, 1914.

Dorothina lewini nea Mathews, *ib.*

Dorothina lewini mab Mathews, *ib.*

Dorothina lewini ivi Mathews, *ib.*

DISTRIBUTION. Eastern Australia from Barron River, North Queensland, to Victoria.

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Adult. Top of the head and hind-neck olive, tinged with grey, and blackish shaft-streaks to the feathers; lores, eyelid, and a superciliary band, which extends to the sides of the neck, black; the feathers behind the eye glossy-black; ear-coverts sulphur-yellow; back, rump, upper tail-coverts, scapulars, and upper wing-coverts dark olive-green, outer aspect of wing paler than the back; flight-quills blackish-brown fringed with bronze-green on the outer webs and margined with buffy-white on the inner ones; tail bronze-brown; a whitish line below the eye; a blackish moustacial-streak; under-surface pale olive-green with dark centres to some of the feathers including the throat, breast, abdomen, and sides of the body; thighs ochreous-brown; under tail-coverts whitish with brown centres; axillaries yellowish-green; marginal under wing-coverts pale buff; under wing-coverts and inner margins of quills below pale yellow; remainder of quill-lining dark brown; lower aspect of tail pale bronze-brown with white shafts. Bill black, eyes brown, tarsus brown, feet darker. Total length 195 mm.; culmen 16, wing 101, tail 85, tarsus 26. Figured. Collected on the Richmond River, Northern New South Wales, in September 1901.

The sexes are alike.

Eggs. Two to three eggs form the clutch, usually two. A clutch of two eggs taken at Booyong, Richmond River, New South Wales, on the 14th of October, 1899, is white, well spotted and blotched, particularly at the larger ends, with reddish-brown, some spots approaching almost to black. Ovals in shape; surface of shell fine and rather glossy. 24 by 18 mm. A clutch of two eggs taken at Herbert's Creek, near Rockhampton, Queensland, on the 14th of October, 1917, measures 21-22 by 16 mm.

Nest. A handsome cup-shaped structure, composed of decayed leaves, bark, and moss, warmly lined with a thick pad of a soft silky substance collected from seed-pods of various native vines and plants. Dimensions over all: $3\frac{1}{2}$ to $4\frac{1}{4}$ inches across, by $2\frac{1}{2}$ to $3\frac{1}{4}$ inches deep; and inside the egg cavity is 2 inches to $2\frac{1}{2}$ inches across, by $1\frac{1}{2}$ to 2 inches deep. The nests vary in size according to the class of material used in their construction.

Breeding-months. August to end December, and sometimes later.

GOULD'S field-notes read: "The Yellow-eared Honey-eater is very common in New South Wales, where it inhabits the thick brushes. I found it especially abundant in all parts of the river Hunter as well as on the Liverpool and other ranges. No examples came under my notice in South Australia, and I do not believe that it extends so far to the westward. In its habits and disposition it assimilates very closely to the *Ptilotis flavigula* of Tasmania. It prefers low scrubby trees to those of a larger growth. I have often been permitted to approach within a few yards of it while threading the dense brushes without causing it the least alarm. Like the rest of its genus, this species feeds on insects, the pollen of flowers, and occasionally fruits and berries. It is not celebrated for the richness of its notes or for the volubility of its song, but its presence, when not visible among the foliage, is always to be detected by the loud ringing whistle note, which it continually pours forth during the months of spring and summer."

Mr. J. W. Mellor has written me: "This bird I have met with in Victoria,

YELLOW-EARED HONEY-EATER.

but more abundantly in New South Wales and Queensland; in the latter place they were seen in numbers in the Blackall Ranges, where they like the bushed and timbered localities, and their loud clear whistling notes would resound again and again in the crisp early morning air. This was in October and November, 1910, while I was staying for a few weeks at Coorong, a small town in these densely clothed ranges. I noted these birds also in fair numbers in the Hawkesbury district along the Ourimbah Creek, which is thickly grown with subtropical vegetation, in November, 1911."

Mr. A. G. Campbell also wrote me: "Found throughout the mountain gullies of Victoria, but rarely. A nest was discovered in November, 1897, in the Dandenong Ranges. It was lined with vegetable wool picked with great patience from the underside of the large leaves of the Blanketwood. In the same locality two other nests were subsequently taken, two eggs being the clutch."

Mr. F. E. Howe wrote me: "The clear and loud ringing note of this elegant bird is often heard in the dense patches of hazel that occur at Fern-tree Gully. It is extremely shy and is rarely seen. On November 11th, 1907, I found a nest from which the young had already flown."

Dr. Cleland states that the note resembles dice rattling in a box.

Mr. L. G. Chandler has also written me: "This Honey-eater is rather a rarity in the Dandenong Ranges. It is fond of the gullies and creeks and is rarely found far from water. They are shy birds and always watch your movements suspiciously. I know of one locality in the Dandenongs where some fig-trees were growing along the banks of a creek, and when the figs were ripening you were certain to find two or three of these birds in attendance. They seem to have cultivated a great liking for ripe figs. Insects form a large portion of their food.

Godfrey has recorded: "A small party of three spent a Sunday about the middle of November, 1904, at Ferntree Gully. While partaking of our luncheon in a quiet spot in the heart of the Gully, we were much interested by the fearless actions of a bird, which we identified as the Yellow-eared Honey-eater (*P. lewini*). One of our party was eating a sardine sandwich, when the bird alighted on a small stick lying on the ground, and partook of the sandwich readily out of his hand, and then flew off with its mouth full, probably to feed a young family. This performance was repeated several times, the bird returning to where our things were spread each time. It not only relished sardine sandwich, but showed a decided liking for jam-roll and scone, and finished up with banana. The most amusing part was that the bird was not at all alarmed by our presence, as we were freely discussing its markings, and to what species it belonged, all the time it was filling its mouth."

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Harvey Brothers wrote from Mackay, North Queensland: "This noisy Honey-eater is usually found in the vicinity of scrub, where it lives chiefly on honey extracted from blossoms, varying its diet occasionally with insects and berries. It builds a cup-shaped nest of tea-tree bark adorned with spiders' cocoons. The nest is generally placed in the top of some vine-covered sapling in or near the scrub. The two eggs which form the clutch are pure white with a few specks of dark brown at the larger end."

Captain S. A. White, reporting on the birds observed on the Bunya Mountains, Queensland, wrote: "This bird was very numerous, and met with in nearly every situation. Its great range of notes are all very pleasing, but are so varied that one often has to pause and listen to make sure of the bird."

Campbell was puzzled by the northern forms and wrote in connection with the birds of Rockingham Bay district: "We found this a fairly common species. It frequented the flowering citrus trees of gardens, and came into outhouses and even dwellings after fruit; hence sometimes the local name of 'Banana Bird.' In the open the bird fossicked various native flowers, including the olive-green floriferous heads of a climbing *Pisonia* (*P. aculeata*). These flowers, judging by the hum of insects (including a big 'bumble bee') about them, must be heavily charged with nectar. Several nests of the Honey-eater were taken on the coast-land, and birds observed, but the nest which we were 'shepherding' on the table-land was destroyed by some evil thing. The table-land birds were more tuneful, and frequently gave the characteristic trilling whistle of *lewinii*, which we never heard the lowland birds give. Therefore, we thought the lowland variety might be possibly *P. notata*, but the only skin obtained in that locality proved to be *lewinii*. Could the commonly reputed *notata* of collectors, after all, be a northern form only of the widely distributed *lewinii*? We regretted we did not get more material while on the spot."

Gould wrote: "This bird is certainly the *Meliphaga chrysotis* of Lewin's *Birds of New Holland*, where it is beautifully figured, but it is equally certain that it does not correspond with Latham's description of his *Certhia chrysotis* as given in his *General History*; neither is it figured by Vieillot in his *Oiseaux Dorés*, to which Latham refers. I shall, therefore, adopt the specific name *Lewinii* proposed for it by Swainson."

This was in his "Handbook," as previously he had called this bird *Ptilotis chrysotis*, and apparently the rectification was due to the examination of the Lambert drawings where he saw a picture named as Latham's species.

There has been much confusion in connection with this species, so I quote Latham's account:

"*Certhia chrysotis* Latham, Suppl. Index Ornith., p. xxxviii., 1801.

YELLOW-EARED HONEY-EATER.

"*C. cinereo-fusca* subtus alba, macula pone aures ovata aurea, alteraque, superius nigra.

"Yellow-eared Creeper, *Gen. Syn. Sup.*, II., p. 169, 33. Habitat in *Nova Hollandia*, magnitudo *Fringillæ*: lingua setacea.

"Yellow-eared Creeper. Size of a Hedge-Sparrow; length six inches; bill and legs black; tongue bristly; irides dirty pale red; the plumage on the upper parts of the body pale dirty brown, beneath white; below the ear an oval spot of a fine yellow colour, and above it a smaller one of black. Inhabits New South Wales."

When G. R. Gray examined the Lambert drawings he wrote:

"*Certhia chrysotis* Lath. *Ptilotis chrysotis*.

Very similar to Vieill. O.D. t. 84.

Philemon chrysotis, Vieill.; *Ptilotis*

fusca Gould; nec *Meliphaga chrysotis*

Lewin; *Ptilotis chrysotis* Gould *Ptilotis lewinii* Sw."

As noted above Gould accepted the latter item, but queried the identity of *Certhia chrysotis* Lath. with his own *P. fusca*.

The Watling drawings revived this matter, as Sharpe concluded (*Hist. Coll. Nat. Hist. Brit. Mus.*, Vol. II., p. 129, 1906):

"No. 115. This figure represents *Ptilotis lewini* of Gadow's 'Catalogue' IX., p. 229, and the latter species should, therefore, stand as *P. chrysotis* (Lath.).

"Watling's note: 'One-half the natural size. This bird, which is not very common in New South Wales, has one single sweet whistling note. It is very shy and seldom seen, and, as most small birds in this country, it has a feathered tongue for the purpose of catching flies, etc., and sucking honey from the flowers and plants on which most of them live.'

"No. 116. Missing.

"No. 117. Yellow-eared Creeper. Latham has confused this figure with the foregoing. It seems to have been drawn from a specimen of *Ptilotis fusca* of Gould. This figure may have been taken from a bird in worn plumage.

"No. 118. Yellow-eared Creeper. Here again Latham has confounded a very different species, and there can be no doubt, I think, that the bird figured is not *Ptilotis chrysotis* (M. 115), but is *Sylvia chrysops* Lath., Ind. Orn. Suppl., p. LIV. (Black-cheeked Warbler (not Honey-eater, as Gadow quotes it, of Latham *Gen. Syn.*, Suppl. II., p. 248).

"Watling's note is: 'Natural size. This bird has a pleasant whistling note.'

"No. 119. Yellow-eared Creeper. This is also identified by Latham

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with the foregoing pictures, but it is evidently meant for a small figure of *P. lewini* (= *P. chrysotis* [Lath.]).

“Watling’s note is: ‘Half the natural size. It is a very lively bird, sucks honey out of the gum-tree flowers, and catches flies, insects, etc.’”

Now while it is certain that Latham confused many species with his Yellow-eared Creeper, it is equally certain that the description was drawn up from one painting alone.

Upon re-examining the Watling paintings it was at once seen that the description had been taken from No. 117, not 115, as Sharpe had given. This picture seemed to me to represent *P. plumulus*, but certainly not *P. lewinii*. I then recommended the name for acceptance in that connection, but upon drawing up my 1913 “List,” I dismissed the name altogether, explaining:

“*Certhia chrysotis* Latham, p. xxxviii.

This name is based upon Watling’s Plate 117. Gray identified this as *P. fusca* Gould. Sharpe connected Watling’s Plate 115 with this name (*C. chrysotis*), but the description does not agree. Sharpe’s conclusion regarding Plate 117 was that it might have been drawn from a specimen of *Ptilotis fusca* in worn plumage. I recognised in it the Eastern representative of Gould’s *P. plumulus*, but on account of the indefiniteness of the drawing and the many attempts to fix the name, I would discard it as indeterminable.”

This seems still the best course to adopt, although it may be *fusca*.

In my “Reference List” in 1912 I introduced three subspecies admitting four as follows:

Ptilotis lewinii lewinii (Swainson).

New South Wales.

Ptilotis lewinii nea Mathews.

“Differs from *P. l. lewinii* in its darker olive coloration (Dandenong).”

Victoria.

Ptilotis lewinii mab Mathews.

“Differs from *P. l. lewinii* in its distinctly light greyish upper coloration. Inkerman, Queensland.”

Mid-Queensland.

Ptilotis lewinii ivi Mathews.

“Differs from *P. l. mab* in its smaller size (wing 90 mm.) and darker grey coloration. Barron River, Queensland.”

North Queensland.

In my 1913 “List” I used the genus name *Meliphaga* in place of *Ptilotis*, but have since replaced the former by *Dorothina*, but no more subspecies have been described, nor has any criticism of the admitted four been made.

Order PASSERIFORMES.

No. 666.

Family MELITHREPTIDÆ.

DOROTHINA ALBILINEATA.

WHITE-STRIPE HONEY-EATER.

(PLATE 530.)

PTILOIS ALBILINEATA H. L. White, Emu, Vol. XVI., pt. 3, p. 165, Jan. 15th, 1917 : King River, Northern Territory.

Ptilotis albilineata H. L. White, Emu, Vol. XVI., p. 165, 1917 ; *id.*, *ib.*, p. 228, and plate XLV.

DISTRIBUTION. Northern Territory.

Adult female. Top of head, hind-neck, sides of neck, and sides of face dusky-brown with a white streak along the last ; back, rump, upper tail-coverts, scapulars, and lesser upper wing-coverts mouse-brown, median, greater series, bastard-wing, primary-coverts and flight-quills dark brown, the outer webs of the last fringed with greenish-yellow and the inner ones margined with pale buff ; tail hair-brown with obsolete cross-bars and pale tips to some of the feathers ; chin and throat whitish ; darker and inclining to smoke-brown on the fore-neck, breast, and sides of breast ; abdomen, flanks, and under tail-coverts whitish with pale brown centres to the last ; axillaries greyish-white ; under wing-coverts buff ; under-surface of flight-quills dark brown with buff margins ; lower aspect of tail pale brown with white shafts. Bill brownish-black, eyes bluish-grey, feet brownish-grey. Total length 165 mm. ; culmen 18, wing 84, tail 74, tarsus 22. Figured. Collected on the King River, Northern Territory, on the 14th of October, 1915.

Sexes alike (?).

Nest and *eggs* not described.

WHEN H. L. White described this, the most recently discovered species of "*Ptilotis*," he gave from McLennan's notes : "The bird appears to be confined exclusively to the rocky gorges of the sandstone hills, and was seen only in the deepest and narrowest ravines. Its call is a loud clear whistle, 'Tu-u-u-heer, tu-u-u-in,' uttered occasionally. When the call is imitated the birds will come within a few feet of the observer, peer all round, and try to locate the sound. On one occasion a pair of birds was called up and became very excited, flitting through the bushes, and even examining the crevices in the sandstone."

"Stomach, honey and insect remains, skins and seeds of berries and fruit."

This is all that is known as yet of this interesting species.

Order PASSERIFORMES.

No. 667.

Family MELITHREPTIDÆ.

DOROTHINA VIRESCENS.

SINGING HONEY-EATER.

(PLATE 531.)

MELITHREPTUS VIRESCENS Vieillot, Nouv. Diet. d'Hist. Nat., nouv. ed., Vol. XIV., p. 329, Sept. 13th, 1817 : Nouvelle Hollande," coll. by Peron and Lesueur, i.e., at Shark's Bay, West Australia.

Melithreptus virescens Vieillot, Nouv. Diet. d'Hist. Nat., nouv. ed., Vol. XIV., p. 329, 1817; Pucheran, Archives Mus. d'Hist. Nat. (Paris), Vol. VII., p. 349, 1850.

*Ptilotis sonorus** Gould, Proc. Zool. Soc. (Lond.), 1840, p. 160, July 1841 : South Australia; *id.*, Birds Austr., pt. xx. (Vol. IV., pl. 33), Sept. 1st, 1845; *id.*, Handb. Birds Austr., Vol. I., p. 504, 1865; Ramsay, Proc. Zool. Soc. (Lond.), 1877, p. 350 (N.Q.); Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 234, 1884; Ramsay, Proc. Linn. Soc. N.S.W., Ser. 2, Vol. I., p. 1,092, 1887; Hall, Key Birds Austr., p. 41, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 390, 1901; Hall, Emu, Vol. I., p. 100, 1902 (N.W.A.); Milligan, *ib.*, Vol. II., p. 73, 1902 (W.A.); *id.*, *ib.*, Vol. III., p. 18, 1903 (W.A.); Carter, *ib.*, p. 92 (M.W.A.); Hill, *ib.*, p. 106 (W.A.); *id.*, *ib.*, p. 228, 1904 (W.A.); Milligan, *ib.*, Vol. IV., p. 10, 1904 (W.A.); Lawson, *ib.*, p. 131, 1905 (W.A.); Batey, *ib.*, Vol. VII., p. 9, 1907 (Vic.); A. J. Campbell, *ib.*, p. 92; North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 116, 1907; Mathews, Handl. Birds Austr., p. 95, 1908; Whitlock, Emu, Vol. VIII., p. 183, 1909 (W.A.); Mathews, *ib.*, Vol. IX., pp. 14-63 (N.W.A.); Hall, *ib.*, p. 129, 1910 (S.A.); Whitlock, *ib.*, p. 211 (W.A.); Macgillivray, *ib.*, Vol. X., pp. 22-33 (N.S.W.); Hill, *ib.*, p. 286, 1911 (N.W.A.); Cleland, *ib.*, Vol. XI., p. 91, 1911 (Food); *id.*, *ib.*, Vol. XII., p. 16, 1912 (Food); Hill, *ib.*, p. 244, 1913 (Central Australia); S. A. White, *ib.*, Vol. XIII., p. 31, 1913 (S.A.); Chandler, *ib.*, p. 43 (Vic.); S. A. White, *ib.*, p. 128, 1914 (S.A.); Macgillivray, *ib.*, p. 178 (Q.); Barnard, *ib.*, Vol. XIV., p. 49, 1914 (N.T.); Purnell, *ib.*, Vol. XV., p. 44, 1915 (Vic.); Whitlock, *ib.*, Vol. XVII., p. 175, 1918 (N.W.A.); Campbell, *ib.*, Vol. XVIII., p. 5, 1918 (N.W.A.); Morse, *ib.*, p. 69 (Q.); Whitlock, *ib.*, p. 248, 1919 (W.A.); Campbell, *ib.*, p. 264 (W.A.); Mann, *ib.*, p. 297 (Vic.); Ashby, *ib.*, Vol. XX., p. 136, 1921 (W.A.); Alexander, *ib.*, p. 167 (W.A.); Whitlock, *ib.*, p. 186 (W.A.); Russell, *ib.*, Vol. XXI., p. 142, 1921 (Vic.).

Meliphaga sonora Gray, Genera Birds, Vol. I., p. 122, 1846; Belcher, Birds Geelong, p. 337,

* Generally spelt *sonora*.

Witherby & Co

DOROTHINA VIRESCENS
(SINGING HONEY-EATER)

H. Grönvold del



NATIONAL MUSEUM MELBOURNE

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- 1914; S. A. White, *Emu*, Vol. XV., p. 161, 1916 (Central Australia); Ashby, *ib.*, Vol. XVI., p. 233, 1917 (S.A.); S. A. White, *ib.*, Vol. XVIII., p. 24, 1918 (S.A.); *id.*, *ib.*, p. 198, 1919 (S.A.); *id.*, *ib.*, Vol. XXI., p. 94, 1921 (Central Australia).
- Meliphaga vittata* Bonaparte, *Comptes Rendus Acad. Sci. (Paris)*, Vol. XXXVIII., p. 263, 1854, Feb. 6th (ex Cuvier MS.): Shark's Bay, West Australia.
- Ptilotis vittata* Ramsay, *Proc. Linn. Soc. N.S.W.*, Vol. II., p. 189, 1878; *id.*, *ib.*, Ser. 2, Vol. II., p. 169, 1887; *id.*, *Tab. List Austr. Birds*, p. 12, 1888.
- Ptilotis forresti* Ingram, *Bull. Brit. Orn. Club*, Vol. XVI., p. 116, July 10th, 1906: Alexandra, Northern Territory; *id.*, *Ibis*, 1907, p. 412; H. L. White, *Emu*, Vol. XIII., p. 49, 1913 (Eggs); Barnard, *ib.*, p. 209, 1914 (N.T.).
- Ptilotis insularis* Milligan, *Emu*, Vol. XI., pt. 2, p. 124, Oct. 2nd, 1911: Rottneest Island; Alexander, *ib.*, Vol. XX., p. 167, 1921.
- Ptilotis sonora sonora* Mathews, *Nov. Zool.*, Vol. XVIII., p. 405, Jan. 31st, 1912.
- Ptilotis sonora walgetti* Mathews, *ib.*: (Walgett) New South Wales.
- Ptilotis sonora broomei* Mathews, *ib.*: Broome Hill, South-west Australia.
- Ptilotis sonora insularis* Mathews, *ib.*
- Ptilotis sonora murchisoni* Mathews, *ib.*: East Murchison, West Australia.
- Ptilotis sonora rogersi* Mathews, *ib.*, p. 406: Wyndham, North-west Australia.
- Ptilotis sonora decipiens* Mathews, *ib.*: Mungi, (Interior) North-west Australia.
- Ptilotis sonora forresti* Mathews, *ib.*
- Ptilotis sonora cooperi* Mathews, *Austral Avian Record*, Vol. I., pt. 2, p. 50, April 2nd, 1912: Melville Island, Northern Territory.
- Meliphaga sonora sonora* Mathews, *List Birds Austr.*, p. 274, 1913; S. A. White, *Emu*, Vol. XIV., p. 191, 1915 (Central Australia); *id.* *ib.*, Vol. XVI., p. 14, 1916 (S.A.).
- Meliphaga sonora broomei* Mathews, *List Birds Austr.*, p. 274, 1913.
- Meliphaga sonora insularis* Mathews, *ib.*
- Meliphaga sonora murchisoni* Mathews, *ib.*
- Meliphaga sonora decipiens* Mathews, *ib.*
- Meliphaga sonora rogersi* Mathews, *ib.*; *id.*, *South Austr. Orn.*, Vol. 3, p. 208, 1918.
- Meliphaga sonora cooperi* Mathews, *ib.*
- Meliphaga sonora forresti* Mathews, *ib.*
- Meliphaga sonora walgetti* Mathews, *ib.*
- Meliphaga sonora westwoodia* Mathews, *Austral Avian Record*, Vol. II., pt. 4, p. 77, Dec. 29th, 1913: Westwood, Queensland.
- Meliphaga virescens* Mathews, *ib.*, pt. 5, p. 101, Sept. 24th, 1914; McGilp, *Emu*, Vol. XXII., p. 286, 1923; Whitlock, *ib.*, Vol. XXIII., p. 277, 1924.
- Meliphaga virescens virescens* Mathews, *ib.*, p. 102.
- Meliphaga virescens sonora* Mathews, *ib.*, p. 101.
- Meliphaga virescens broomei* Mathews, *ib.*
- Meliphaga virescens insularis* Mathews, *ib.*
- Meliphaga virescens murchisoni* Mathews, *ib.*
- Meliphaga virescens decipiens* Mathews, *ib.*

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Meliphaga virescens rogersi Mathews, *ib.*

Meliphaga virescens cooperi Mathews, *ib.*

Meliphaga virescens forresti Mathews, *ib.*

Meliphaga virescens walgetti Mathews, *ib.*

Meliphaga virescens westwoodia Mathews, *ib.*

Dorothina virescens everardi Mathews, Bull. Brit. Orn. Club, Vol. XXXVI., p. 91, July 7th, 1916 : Everard Ranges, Central Australia.

Meliphaga virescens hartogi Mathews, *ib.*, Vol. XL., p. 76, Jan. 30th, 1920 : Dirk Harteg Island, West Australia.

Dorothina virescens virescens Carter, Ibis, 1917, p. 609.

DISTRIBUTION. Australia generally. Not Tasmania.

Adult male. Top of head, nape, and hind-neck pale smoke-brown, with dark shaft-streaks to the feathers and tinged with grey; mantle, back, rump, upper tail-coverts, scapulars, and upper wing-coverts ochreous-brown; flight-quills blackish-brown fringed with bronze-yellow on the outer webs and margined with pale buff on the inner ones; tail-feathers also blackish-brown fringed with bronze-yellow; lores, eye-region, and a broad line along the sides of the crown black; a narrow line below the eye extending to the ear-coverts pale yellow; ear-coverts white; chin and throat greyish-white; fore-neck, breast, and sides of breast pale drab-brown tinged with yellow, becoming paler and inclining to buff on the abdomen, sides of body, and under tail-coverts; axillaries and under wing-coverts, and inner margins of flight-quills below pale buff; remainder of quill-lining and lower aspect of tail bronze-brown more or less tinged with yellow. Eyes brown, feet and tarsi dark leaden-blue, bill black. Total length 198 mm.; culmen 16, wing in moult; tail 83; tarsus 25. Figured. Collected on Apsley Straits, Melville Island, Northern Territory, on the 29th of October, 1911, and is the type of *P. s. cooperi*.

Adult female similar to the adult male.

Adult female. General colour of the upper-surface dark olive-brown, including the top of the head, nape, hind-neck, back, rump, upper tail-coverts, scapulars, and lesser upper wing-coverts, more or less tinged with grey on the crown; bastard-wing, primary-coverts, and flight-quills dark brown fringed with yellowish-green on the outer webs and with whitish on the inner webs of the last; tail-feathers also dark brown fringed with yellowish-green; lores, eye-region, and a band along the sides of the face which extends on the sides of the neck black; ear-coverts yellow tipped with white; a slightly indicated moustacial-streak of pale umber-yellow and a dark one along the base of the lower mandible; chin and throat pale yellow; breast and sides of breast pale brown with pale fringes to the feathers, becoming paler and inclining to grey on the flanks; vent buff; thighs pale rust-colour; under tail-coverts similar to the breast but paler; under wing-coverts and axillaries pale buff; under-surface of flight-quills hair-brown with yellowish margins; lower aspect of tail pale yellowish bronze-brown. Total length 160 mm.; culmen 15, wing 90, tail 85, tarsus 25. Collected on Rottneest Island, West Australia, on the 13th of July, 1903, and is *P. insularis* Milligan.

Adult male similar to the adult female.

Immature female. Top of head, nape, and hind-neck mouse-brown; lores and eyelids black; feathers behind the eye and sides of crown also black; back, rump, upper tail-coverts, scapulars, and a portion of the lesser upper wing-coverts ochreous; outer aspect of wings greenish-yellow; inner webs of flight-quills hair-brown with

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buffy-white margins ; tail-feathers also hair-brown with yellowish-green margins ; a narrow streak below the eye and ear-coverts lemon-yellow ; chin, throat, and fore-neck greyish-white ; breast, abdomen, sides of body, thighs, and under tail-coverts pale buff tinged more or less on the abdomen with silvery-white ; axillaries, under wing-coverts, and inner-margins of quills below buff ; remainder of quill-lining hair-brown ; lower aspect of tail similar to its upper-surface. Eyes bluish, feet slaty-grey, bill black. Collected at Carsuinia, Everard Ranges, Central Australia, on the 13th of August, 1914.

Immature. Top of head and nape mouse-brown tinged with grey ; back, rump, upper tail-coverts, scapulars, and some of the lesser upper wing-coverts, ochreous-brown, outer aspect of wings yellowish-green ; inner webs of flight-quills dark brown with buffy-white margins on the basal portions ; tail-feathers dark brown tinged with green ; lores, eyelids, feathers behind the eye, and sides of crown black ; a narrow line below the eye and ear-coverts lemon-yellow inclining to white at the tips of the last ; chin and throat greyish-white ; breast, abdomen, sides of body, thighs, and under tail-coverts dusky-grey ; under wing-coverts and inner margins of flight-quills below buff, remainder of quill-lining pale brown ; lower aspect of tail similar to its upper-surface. Collected at Fountain Head, Northern Territory (?), on the 2nd of April, 1895.

Eggs. Two to three eggs form the clutch, and they vary very much both in size and shape. A clutch of three eggs, taken at the upper Irwin River, Western Australia, on the 27th of October, 1907, is of a pale pinkish-buff ground-colour, with a few very minute brownish specks scattered about on the larger ends. Ovals in shape, surface of shell smooth and glossy. 23 by 16 mm. The eggs closely resemble those laid by the Pallid Cuckoo.

Nest. Rather a well-constructed cup-shaped structure suspended from the small branches of a bush or small tree. Composed of grasses, strips of bark, etc., and lined with fur, wool, or other soft material. Measurements over all : 3 to nearly 4 inches, by about 3 inches deep. Inside egg cavity, 2 to 2½ inches across by nearly 2 inches deep. The nests are often smaller than the one here described.

Cup-shaped and suspended by the rims from a fork. Composed of fine grass stems interwoven with spiders' web, lined at the bottom with wool. Inside measurements, 2½ inches by 1½. Collected at Bala Station, Morgan, South Australia.

Breeding-months. Usually August to end December. (May to August or after rains.)

ALTHOUGH this species had been described before Gould named it, as I shall explain later, in dealing with the technical history, Gould's field-notes are the earliest published, thus : " I have abundant evidence that the range of this species extends across the entire continent of Australia from east to west ; I found it very numerous on the Namoi and other portions of the interior of New South Wales, and equally plentiful in South Australia ; it is one of the commonest birds of the colony of Swan River, and we know that it extends very far north, for examples were procured by Gilbert during Dr. Leichardt's expedition from Moreton Bay to Port Essington. Moderately sized trees, particularly *Casuarinæ* and *Banksia*, thinly scattered over grassy plains and the crowns and sides of low hills, are its usual places of resort. In Western Australia it enters the gardens and commits considerable havoc

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among the fruit trees, particularly figs, of the seeds of which it appears to be very fond. It also feeds upon insects which are principally sought for among the branches; but it frequently seeks for them and small seeds on the ground, when it hops around the boles and beneath the branches of the trees in a most lively manner. Its natural notes are full, clear, and loud, and may be heard at a considerable distance. In South Australia I heard it in full song in the midst of winter, when it was one of the shyest birds of the country. It is exceedingly pugnacious in disposition, often fighting with the Wattle Birds (*Anthochaeræ*) and other species even larger than those. The breeding season commences in August and terminates in December."

Captain S. A. White has sent me the following note: "This bird ranges over the whole of South Australia from the sea-coast to the boundary with the Northern Territory. At one time most local ornithologists believed that this bird was only found in the coastal fringe, but that is quite altered now. There is no doubt they love the low bush which grows over the sand-dunes in so many places along our coast line, so much so that one cannot help associating this bird's call with the scent of the sage bush and the blossoms of the currant bush, both prominent features in the flora of the sand dunes. I hardly think there is any part of South Australia that I have visited and have not found this Honey-eater. There are skins from all parts in my collection, but there seems to be little variation. Their habits seem the same everywhere, be it on the coast amidst a big timbered country with a mean average rainfall of 30 inches, or in the almost treeless interior of not more than 4 inches. Near the coast line they are early nesters and often begin early in August, and have often seen their nests with young late in November, which would lead one to suppose that they bring out two, if not three, broods in the season. The nest is placed, as a rule, in an upright fork in the centre of a thick bush, and is composed of dry grass, cobwebs, often lined with thistledown. The eggs are generally three, and the Pallid Cuckoo is very fond of laying her eggs in the nest, the two eggs being very much alike. The note is loud and musical. The food consists mostly of insects, but it also takes honey from the flowers and I have found small berries in the stomachs."

Mr. J. W. Mellor's note reads: "The singing Honey-eater is one of the common birds to be seen along the sea-coast. It loves to dwell amongst the sand-dunes, where brush and stunted trees are the main vegetation and where the honeysuckle tree grows. Here its loud singing call enlivens the scene and acts as a melody in marked contrast to the raging roar of the billowy ocean close at hand, but although these birds were generally supposed to be found only along the coasts I have seen them several hundreds of miles from it, in dry and arid regions, for while in the far north-west of South Australia out

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beyond the Tarcoola Goldfields I repeatedly came in contact with the bird in the acacia country, and it often came and ate the berries of the mistletoe that grew on the Mulga Acacia close to the Wilgena homestead, where I was staying in June 1912. The notes were the same here as near the coast. I have seen the bird in Victoria and New South Wales, but there it was in close proximity to the sea-coast. Its chief food is honey from the flowers, also berries growing on the bushes generally found on the sandy soil near the sea, it will also eat quantities of insects; at the Reedbeds near Adelaide I have seen them in my garden and during the fruit season they at times become somewhat of a nuisance to early soft fruit such as figs."

Mr. F. E. Howe has written me: "This form is very common at Parwon, where we notice them feeding high up in the Eucalypts. They suck the honey from the Eucalyptus blooms, but at other times they appear to feed on a small scab and other insects that they find on the leaves and along the Mallee limbs."

A. J. Campbell has recorded: "This fine species enjoys a wide range, and is evidently a hardy bird. My son, Mr. A. G. Campbell, brought home a clutch of three fledglings from the Anglesea coastal district (south-west of Port Phillip) where he described these Honey-eaters as very plentiful, welcoming in all directions the break of day with their merry calls. The youngsters were readily reared on sifted 'Lark-food' moistened with honey-water, and flies. They became great pets in the aviary, and when anyone entered they would perch on the shoulder or bare head, and readily take flies from the palm of the hand. They did not sing in any way that their name would suggest, but uttered lively calls, and occasionally mimicked the alarm note of their cousin, *P. pencillata*, which occupied the same aviary."

Captain S. A. White has recorded about the Gawler Ranges, South Australia: "This very familiar bird was met with at both ends of the ranges, but I doubt whether it is numerous in the hills themselves, where we saw one or two solitary birds. A few pairs were nesting at the eastern end in the low shrubs which marked the course of a stony creek running out upon the saltbush plain. The nests contained from two to three eggs, all fresh. Although this bird's ordinary call is melodious, it has also some short, harsh and discordant notes. It is very inquisitive, and when its curiosity is aroused the antics it goes through at times are very ludicrous."

Macgillivray has noted that it is "numerous in the Gulf country between the Leichardt and Gregory Rivers. Stomach contents, insects."

Barnard stated that it is a "Common bird in tea-tree localities" at the McArthur River, Northern Territory.

Morse has observed: "I often wonder why these birds are designated 'Singing.' Their notes are few and far between—one a 'Preet, preet, preet,'

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which is a call to its mates ; another a plaintive little mew, something like that of a kitten ; and another of two notes, which I never heard during the breeding-months. Their food is chiefly gathered from the mistletoe blossoms, and, although they can be heard from the house, I never knew one to touch fruit in the garden."

Mann then added a good note regarding the breeding of a pair and, "as regards their vocal accomplishments," he observed, "my experience differs somewhat from that of Mr. Morse. The rather high-pitched, musical little bar of several notes, from which I have assumed they derived their name, is given frequently during the whole time they are with me, and the 'Preet, preet' only when they call each other. When they want to wean off the first family before their second adventure they use quite a different sound—between a hiss and a snarl, long drawn out—from which the young invariably flee." Mann's experience at Frankston, Victoria, was that they arrived in the middle of September, reared two broods, the first driven out about Christmas, the second the end of February, and disappeared by the middle of April.

Carter investigated the avifauna of Dirk Hartog Island on my behalf and observed: "The large size and bold markings of the birds on Dirk Hartog Island attracted my attention at the homestead immediately on arrival. Specimens from Dirk Hartog and the Peron average one inch longer in total measurement than birds from Carnarvon or Point Cloates districts. They are also much darker in the general colour of the mantle and underparts, and the black, yellow, and white stripes behind the eyes are larger and brighter in colour. Their habits and notes are the same as those from other localities. All the scrub on the island swarmed with recently fledged young and their parent birds in October, and their noisy presence distracted attention when searching for Grass Wrens." This was the only species of Honey-eater observed on Dirk Hartog.

Whitlock found it also on Barrow Island, writing: "Common wherever suitable cover existed on Barrow Island and Double Island, but absent from the smaller islands of the Archipelago. At the time of my visit it was breeding in a half-hearted manner and I don't think I noted more than seven nests," and later added: "One of the commonest and certainly the most obtrusive bird both on Dirk Hartog and Peron Peninsula. It was nesting in both localities, large *Acacia* bushes being the favourite haunt."

Ashby noted it was common at places visited in his West Australian trip to Geraldton, etc., while Alexander reports that in the Perth district it is "Resident. The most abundant member of the family in the district, being specially plentiful on the coastal hills and the islands off the coast."

Mr. Tom Carter has written me: "The Singing Honey-eater is abundant

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all through the Gascoyne and Mid-west districts, on the coast and inland. Though rather a shy and restless species in the bush, many of the birds become tame about a homestead. At Point Cloates, where my 'dining-table' was on the front verandah, two or three of these birds would regularly visit it, after our meals, and feed on sugar or any jam that might be there. The usual note is a rather hard, double one, something resembling the 'click' sound of two large stones being hit together. In the winter months, at the first sign of daybreak, these birds make quite a pleasing chorus, by many of them singing, from different points, against one another. This is only done as a chorus, at dawn, although the birds individually constantly utter various notes through the day. The nesting season appears to be any time after rains have fallen. The nests are made of grass, and if sheeps' wool is procurable, some of it is often used as a lining. The nests are somewhat bulky, and built in any bush, usually from three to four feet above ground. Two eggs is the usual clutch, occasionally three. May 3, 1900. Two eggs. June 8, 1900. Two young and one addled egg. July 14, 1899. Two eggs. June 21/'01. One egg. Sept. 20-27, '01. Two and three eggs incubated. Aug. 11, 1913. Recently fledged young at Carnarvon. North-west. Aboriginal name PADDERN.

"This species is generally distributed through the south-west, but is not very abundant around Broome Hull nor in *very heavy* timber, the birds preferring more open country. In song and habits they seem the same as the subspecies further north (Gascoyne and North-west Cape). They (subspecies ?) are common about Kellerberin. The breeding-season in the south-west appears to be late. Dec. 11, 1902. Nest with three eggs on Vasse River (Busselton). Dec. 16, 1902. Noted a pair of Singing Honey-eaters at Vasse feeding a fledged young Pallid Cuckoo. Feb. 17, '07. Shot recently fledged young at Broome Hill. (Note—Broome Hill Singing Honey-eater may be used, but not Broome as you have it; Broome is an important town in the North-west.)"

Mr. J. P. Rogers sent me his notes, writing: "Both at Marngle Creek and at Mungi, North-west Australia, these birds were very numerous and they are plentiful in most parts of West Kimberley, especially where there is a good supply of small figs and berries." At Melville Island Rogers only met with it in a patch of stunted scrub about one mile north of Cooper's Camp.

From Derby, North-west Australia, Hall has recorded Rogers' notes as: "Here this is a very shy bird, flying away rapidly when approached and being very difficult to get near. It is generally seen in low scrubby bushes."

Whitlock simply wrote: "A rare bird on the Coongan. Rather more common on the plains of the de Grey and in the mangroves at Condon. On the de Grey the favourite haunt was the patches of 'wild fig' bushes, and at Condon the mangroves where the creeks tailed out into the plains."

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G. F. Hill has observed that in the Kimberley district, North-west Australia: "This widely distributed species shows a decided preference for the poorest class of country, viz., the sandy coastal belt and the sandstone plateau country, on which the principal vegetation is stunted eucalypt."

Barnard noted it was "Common in the Northern Territory."

When Milligan described his *P. insularis* he wrote: "The habitat of this bird is Rottnest Island, off Freemantle, Western Australia, where it is common. It is very like *Ptilotis sonora* in general appearance and colour markings, but may readily be distinguished from that species by being more robust in all its proportions. The under-surface of the new bird is uniformly dark brown, with striations, and lacks the whitish abdomen and under tail-coverts of *P. sonora*. There are also many other minor differences in coloration. I have compared a number of skins of the new species with skins of *P. sonora* from the mainland, Bernier Island, North-west Australia, South Australia and Victoria."

Gould described the Singing Honey-cater from South Australia, and the name was used until quite recently, though very soon after Gould's name was published Bonaparte had pointed out that the bird had been named in the Paris Museum from specimens collected by Peron et Lesueur.

When I prepared my "List" in 1913 I was ignorant of the fact that Pucheran had examined the bird named by Vieillot *Melithreptus virescens* and had stated it was Gould's species. Immediately upon noting this I made the necessary corrections, accepting *M. virescens*, and this became the specific name. The type locality of *M. virescens* was selected as Shark's Bay, as being the only point touched at by Peron and Lesueur where this species might occur, and since then it has been found to be common there.

The species is quite a variable form geographically, but no forms were differentiated until Ingram in 1908 named the bird occurring at Alexandra, Northern Territory, as a distinct species on account of its pale coloration. The specific distinction was denied by most workers at once, but the differences were acknowledged but referred to individual or seasonal variation, whereas they were due to geographical causes and the form was of subspecific value.

Milligan had previously noted from the Stirling Ranges, South-west Australia: "We found this species in one spot only, in some 'sheoaks' (? *Casuarina*) on the south side of the Ranges. The notes they uttered were peculiar, and different to any I have heard before. I shot three or four, but owing to an unfortunate misadventure the specimens were not put into skins."

Lawson, recording it from Rottnest Island, wrote: Not uncommon in the acacia scrubs. Birds of this species inhabiting Rottnest are certainly much darker on the breast and under-parts, and have the dusky stripes better defined

SINGING HONEY-EATER.

than examples from the interior of the mainland." This was written in 1904, and seven years afterward Milligan named the Rottnest form as a distinct species, *P. insularis* (probably from Lawson's specimens but without any mention).

A "Victorian" once wrote: "Gould, who was a good judge of species, stated that he had 'abundant evidence that the range of this species extends across the entire continent of Australia from east to west.' If that be correct, it is feared that many of Mathews's subs., notably *murchisoni*, *decipiens*, *rogersi* and *cooperi*, dissolve into one, which may, in general, be a trifle lighter coloured than, say, those from Victoria or South Australia. More recently, Mathews desires to shift the type locality to Shark Bay. . . . Whitlock collected skins on Barrow Island as well as at Cossack on the mainland. Both examples are similar and typical."

I never said that my *subspecies* were *species*, and I agreed with Gould that the *species* extended from east to west. *I do not desire* to shift the type locality anywhere, I simply give the facts as nearly truthfully as I can get them, and always endeavour to state them correctly. The "Victorian" does not use the word "typical" as is used by experts to-day, otherwise the Shark Bay birds are typical and the others might agree. However, in this case as in so many others, this writer will probably amend his conclusions with further study.

As above recorded, only Ingram and Milligan had recognised the variation of this species, but each had differentiated the forms with specific rank, which I conclude was wrong. When I examined the material during the preparation of my "Reference List" in 1912 I found that the species was very variable geographically, and after reducing the above two "species" to subspecific rank I found I could recognise five more, which, with the typical form, made eight subspecies as follows:

Ptilotis sonora sonora Gould.

South Australia.

Ptilotis sonora walgetti Mathews.

"Differs from *P. s. sonora* in its greyer coloration, slightly shorter bill and shorter wing (92 mm.). (Walgett) N.S.W."

New South Wales.

Ptilotis sonora broomei Mathews.

"Approaches *P. s. sonora*, but is slightly paler above and darker below. Broome Hill, South-west Australia."

South-west Australia.

Ptilotis sonora insularis Milligan.

Rottnest Island, West Australia.

Ptilotis sonora murchisoni Mathews.

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"A pallid form closely resembling *P. s. forresti*, but easily separable by the smaller size and paler coloration. East Murchison."

Mid Westralia.

Ptilotis sonora rogersi Mathews.

"Differs from *P. s. murchisoni* in its browner coloration above. Wyndham, N.W.A."

North-west Australia.

Ptilotis sonora decipiens Mathews.

"Differs from *P. s. rogersi* and all other subspecies in its light grey back. Mungi, N.W.A."

Interior of North-west Australia.

Ptilotis sonora forresti Ingram.

Northern Territory.

A little later I added

Ptilotis sonora cooperi.

"Differs from *P. s. rogersi* in its heavier bill and much darker coloration above and below."

Melville Island, Northern Territory.

These nine were admitted in my 1913 "List" under the genus name *Meliphaga* and the specific name *M. sonora*.

I then added

Meliphaga sonora westwoodia.

"Differs from *M. s. foresti* in being larger and darker. Westwood, Queensland," and almost immediately recognised the application of Vieillot's *Melithreptus virescens* to this species, as it had been definitely recognised as the same species as Gould named *P. sonorus*, and that the specimen had been collected by Peron and Lesueur. I also considered that the Sharks' Bay form should be distinguished as it differed from the other ten named forms.

Receiving specimens from Central Australia I named

Dorothina virescens everardi.

"Differs from *D. v. virescens* (Vieillot) in being paler and smaller. Everard Ranges, Central Australia."

When Carter explored Dirk Hartog Island he found this species the commonest bird, this confirming Peron and Lesueur's typical form, and inadvertently I named it

Meliphaga virescens hartogi.

In Carter's paper the differences between the typical form and the lower mainland birds was noted and discussed; but Campbell has altogether confused the forms so that at present it is necessary to note that twelve subspecies are named with probably many more to follow.

SINGING HONEY-EATER.

The names will now read

Dorothina virescens virescens (Vieillot).

Dorothina virescens murchisoni (Mathews).

Dorothina virescens broomei (Mathews).

Dorothina virescens insularis (Milligan).

Dorothina virescens sonora (Gould).

Dorothina virescens walgetti (Mathews).

Dorothina virescens everardi (Mathews).

Dorothina virescens forresti (Ingram).

Dorothina virescens westwoodia (Mathews).

Dorothina virescens cooperi (Mathews).

Dorothina virescens rogersi (Mathews).

Dorothina virescens decipiens (Mathews).

Order PASSERIFORMES.

No. 668.

Family MELITHREPTIDÆ.

DOROTHINA VERSICOLOR.

VARIED HONEY-EATER.

(PLATE 532.)

PTILOtis VERSICOLOR Gould, Proc. Zool. Soc. (Lond.), 1842, p. 136, February 1843: North Coast of Australia = Cape York.

Ptilotis versicolor Gould, Proc. Zool. Soc. (Lond.), 1842, p. 136, 1843; *id.*, Birds Austr., pt. xv. (Vol. IV., pl. 34), Sept. 1st, 1845; *id.*, Handb. Birds Austr., Vol. I., p. 506, 1865; Ramsay, Proc. Zool. Soc. (Lond.), 1875, p. 595, 1876; *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 189, 1878; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 234, 1884; Ramsay, Tab. List Austr. Birds, p. 12, 1888; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 392, 1901; North, Vict. Nat., Vol. XXI., p. 167, 1905 (Eggs); *id.*, Emu, Vol. V., p. 44, 1905; Smith, *ib.*, p. 210, 1906; North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 118, 1907; Mathews, Handl. Birds Austral., p. 96, 1908; (Banfield), Emu, Vol. VIII., p. 285, 1909; Macgillivray, *ib.*, Vol. X., pp. 221-231, 1910; Barnard, *ib.*, Vol. XI., p. 28, 1911; Macgillivray, *ib.*, Vol. XIII., p. 178, 1914; Campbell and Barnard, *ib.*, Vol. XVII., p. 33, 1917; Macgillivray, *ib.*, p. 205, 1918.

Ptilotis versicolor versicolor Mathews, Nov. Zool., Vol. XVIII., p. 406, 1912.

Meliphaga versicolor Mathews, List Birds Austr., p. 275, 1913; *id.*, Austral Avian Record, Vol. II., p. 79, 1913.

Meliphaga versicolor clelandi Mathews, Austral Av. Rec., Vol. II., pt. 7, p. 132, Jan. 28th, 1915: Cairn Cross Island, Barrier Reef.

Meliphaga versicolor versicolor Mathews, *ib.*

DISTRIBUTION. North Queensland only, mostly on the islands off the Coast.

Adult female. Top of the head, back of the neck, mantle and upper back dark olive-green with blackish-brown middles to each feather, giving these parts a somewhat mottled appearance; lower back and rump tinged with brownish-buff; wing-coverts dark olive-green, narrowly fringed with greenish-yellow; flight-feathers ashy-brown margined on the outer web with yellowish-green and with rich buff on the inner web; tail-feathers dark greenish-olive, margined on the outer web with greenish-yellow, all the feathers being indistinctly barred across with blackish-brown; feathers in front of the eye black, continued over and above the eye and terminating in a large patch on the sides of the neck; a stripe below the eye and lower half of the ear-coverts golden-yellow; a yellowish-white patch behind the ear-coverts; chin yellowish-white, chest, breast, sides of the body and flanks golden-yellow, each feather mesially streaked with blackish-brown; abdomen and under tail-coverts



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Witherby & Co

DOROTHINA FASCIOGULARIS
 (FASCIATED HONEY-EATER)
 DOROTHINA VERSICOLOR
 (VARIED HONEY-EATER)

NATIONAL MUSEUM OF BUREAU

VARIED HONEY-EATER.

whitish-yellow, under wing-coverts golden-yellow, under-surface of quills ash-brown, widely margined on the inner web with rich buff. Bill and eyes black, feet grey. Total length 190 mm. ; culmen 16, wing 94, tail 81, tarsus 27. Figured. Collected at Cape York, North Queensland, on the 26th of August, 1912.

Adult male similar to the adult female.

Eggs. Two eggs usually form the clutch. A clutch of two eggs, taken at Cape York, North Queensland, on the 1st of October, 1910, is of a pale pinkish-buff ground-colour, and possessing an indistinct cap of clouded and very minute spots of pale reddish-brown. Long ovals in shape. Surface of shell fine and smooth, and rather glossy. Closely resemble the eggs of *Meliphaga virescens*. 25-26 by 16-17 mm.

Nest. A neat and comparatively small cup-shaped structure, composed of dried sea-grasses, weeds and dead leaves, and lined with fine roots. Frequently placed in the foliage of a Mangrove tree standing in or near salt water.

Breeding-months. July to end November.

GOULD described this distinct species from one specimen contained in a collection from the northern part of Australia, and nothing was known of its habits.

A. F. Smith only a few years since discovered the nest and eggs on the Frankland Islands, lying off the mouth of Russell River, North Queensland, and these were described by North. Next year Smith wrote of a second visit: "These pretty Honey-eaters, whose eggs I was fortunate in discovering last year, were fairly plentiful, considering the small size of the island, and their loud, musical call was frequently heard. I saw two pairs feeding their young, which were able to fly, but did not find any nests, it being evidently too late. The eggs which I found last year on 16th October were only about two days from hatching."

Banfield has contributed a delightful account to the scant history of this bird in his *Confessions of a Beachcomber*, one of the most notable productions in Australian literature, which must be here quoted: "Once aroused, the Varied Honey-eater is wide awake. His restlessness is equalled only by his impertinent exclamations. He shouts his own aboriginal title 'Go-bidger-oo!' 'Put on your boots!' 'Which-which-which way-which way-which way you go!' 'Get your whip!' 'Get your whip!' 'You go!' 'You go!' 'You go!' 'None of your cheek!' 'None of your cheek!' 'Here-here!' And darts out with a fluster from among the hibiscus bushes on the beach away up to the top of the melaleuca tree; pauses to sample the honey from the yellow flowers of the gin-gee, and down to the scarlet blooms of the flame-tree, across the pandanus palms and to the shady creek for his morning bath and drink, shouting without ceasing his orders and observations. He is always with us, though not always as noisy as in the prime of the year—a cheerful, prying, frisky creature, always going somewhere or doing something in a red-hot hurry, and always making a song of it—a veritable babbler. His love-making is passionate and impulsive, joyous almost to rowdyism."

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Barnard reported from Cape York: "Found only in mangroves. Not plentiful."

Macgillivray has recorded: "This fine large Honey-eater, which bears a superficial resemblance to the Singing Honey-eater, inhabits the mangroves at Cape York, where its tuneful voice is frequently heard in the breeding season. They were plentiful during the season 1910-11, but hardly any were present in 1911-12. In the latter season, however, they were found to be plentiful in the mangroves along the south bank of the Escape River, in the mangroves on Bushy Island, near Cairncross Island, where a fully-fledged young one was seen on 30th June, 1911, and on the Hannibal Islands. A fresh nest was found on the Macarthur Island mangroves and the birds were plentiful on the Bird Islands. At Cape Grenville a nest was found in a small mangrove on 5th July, 1911, containing two half-fledged young birds, and not far away was a half-built nest of the same bird. Later on, on 17th July, a nest with two young birds almost ready to leave it was found on the second of the Bird Islands."

Campbell and Barnard wrote regarding Cardwell birds: "This equally interesting large and yellowish *Ptilotis* we found in the mangroves, particularly near the mouth of the Mcunga Creek. The bird has a loud and rather melodious call, and was seen feeding on the flowering mangroves."

Macgillivray then added: "This fine Honey-eater (the Varied Honey-eater) is never found out of the mangroves, where it is quite common either along the shore or on the islands. When staying at any time at Lloyds' Island we were in the habit of sleeping on one of the cutters, anchored opposite the mangroves, in order to escape the attentions of sand-flies and mosquitoes. Here it was a great pleasure to wake at dawn and listen to the glorious whistling of these birds before the shrieking of the Parrakeets and the 'Hoo-hooing' of the Pigeons began to obscure all other sounds."

This bird was described by Gould from the "North Coast of Australia," and when Witmer Stone examined the Gouldian specimens in Philadelphia he recorded that the "type" was labelled "Port Essington, Northern Territory." I therefore accepted that, but soon observed that it must be wrong as no specimens were known from that locality, whereas it was more or less common at Cape York, and selected that as the correct type locality.

Two subspecies are here admitted

Dorothina versicolor versicolor (Gould).

Cape York, North Queensland.

Dorothina versicolor clelandi (Mathews).

"Differs from *M. v. versicolor* in being much lighter on the back and the black behind the eye not so pronounced."

Cairn Cross Island, Barrier Reef.

DOROTHINA FASCIOGULARIS.

SCALY-THROATED HONEY-EATER.

(PLATE 532.)

PTILOIS FASCIOGULARIS Gould, Proc. Zool. Soc. (Lond.), 1851, p. 285, June 14th, 1854 :
Islands north of Moreton Bay, Queensland.

Ptilotis fasciogularis Gould, Proc. Zool. Soc. (Lond.), 1851, p. 285, 1854; *id.*, Birds Austr. Suppl., pl. 40 (pt. ii), Sept. 1st, 1855; *id.*, Handb. Birds Austr., Vol. I., p. 507, 1865; Ramsay, Proc. Zool. Soc. (Lond.), 1875, p. 595, 1876; *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 189, 1878; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 240, 1884; Ramsay, Tab. List Austr. Birds, p. 12, 1888; Hall, Key Birds Austr., p. 42, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 395, 1901; *id.*, Emu,* Vol. IV., p. 137, 1905; *id.*, *ib.*, Vol. VI., p. 136, 1907; Mathews, Handl. Birds Austral., p. 96, 1908; Cornwall, Emu, Vol. VIII., p. 140, 1909; Broadbent, *ib.*, Vol. X., p. 238, 1910; North, Austr. Mus. Spec. Cat., No. 1, Vol. IV., pt. 5, p. 434, 1914.

Ptilotis fasciogularis fasciogularis Mathews, Nov. Zool., Vol. XVIII., p. 407, Jan. 31st, 1912.

Ptilotis fasciogularis brunnescens Mathews, *ib.*: Burnett River, North Queensland.

Meliphaga fasciogularis Mathews, List Birds Austr., p. 275, 1913.

Meliphaga fasciogularis fasciogularis Mathews, *ib.*

DISTRIBUTION. Queensland, mainly on the islands off the coast.

Adult male. Top of the head, neck, mantle, back, rump, upper tail-coverts and secondaries ashy-brown with darker centres to the feathers; wings ashy-brown, margined on the outer web with yellowish-green and on the inner web with buff; tail similarly coloured; lores and feathers surrounding the eye blackish-brown; ear-coverts primrose-yellow; a tuft of silvery-white feathers behind the ear-coverts, chin and throat smoky-brown, each feather margined with golden-yellow; chest smoky-brown, breast and sides of the body yellowish-white, each feather with a broad marking of smoky-brown; quills below ash-brown, widely margined on the inner web with tawny-buff; tail below olive, shafts of the feathers white. Bill black, feet bluish-grey. Total length 195 mm.; culmen 16, wing 94, tail 85, tarsus 27. Figured. Collected on the Burnett River, North Queensland, in November, 1892, and is the type of *P. f. brunnescens*.

Adult female. Similar to the adult male.

Eggs. Two eggs form the clutch. A pair taken at Victor Island, Mackay, North Queensland, on the 18th of November, 1906, is of a pinkish-buff ground-colour, marked

* cf. Vict. Nat., Vol. XXI., p. 168.

THE BIRDS OF AUSTRALIA.

with minute spots of very pale reddish-brown and purplish-grey, and being confined chiefly to the larger ends where an indistinct cap of clouded markings is formed. Swollen ovals in shape. Surface of shell smooth and rather glossy. 21 by 15-16 mm.

Nest. An open cup-shaped structure, usually placed in the foliage of a Mangrove tree standing in or near salt water.

Breeding-months. August to December (to March or April).

GOULD described most of the species of the genus "*Ptilotis*," but even then favourites were noted, as in this case Gould wrote: "It is pleasing to record for the first time a species so well marked as the present, and which differs from the other members of its genus in the distinct bars of pale yellow and brown which occupy the throat and fore-part of the neck. All the specimens that have yet come under my notice were sent to me a few years since by Strange, who collected them on the low swampy islands lying off the eastern coast of Australia, northward of Moreton Bay; they comprise examples of both sexes, ascertained by dissection, and the only difference between them consists, as is usual with the other members of the genus, in the smaller size of the female. For a *Ptilotis* this is a large and robust species, equalling in size the *P. sonora*, to which it has a close affinity."

Ramsay added a few years afterward: "I find no mention in my notebook of meeting with this bird at Rockingham Bay; but I found it plentiful on an island off Port Denison and near Cleveland Bay, about 60 miles due south of Rockingham Bay. They frequent the mangroves, and are to be met with in considerable numbers on many of the islands and mangrove swamps along the shores of various bays as far south as Moreton Bay. They congregate in considerable numbers, and are very pugnacious at times, fighting among themselves and chattering as the Yellow-tufted Honey-eaters are wont to do. I never met with them away from the margins of the salt water."

Campbell described eggs from Dunk Island collected by Cornwall, and noted: "As far as is yet known, it frequents the mangrove belts of the Queensland coast and islands contiguous thereto; in fact, it is sometimes locally called the 'Island' Honey-eater. Mr. Cornwall recently noticed the birds on Franklin Islands, near Cairns, while in 1885, during an excursion made by Mr. A. W. Milligan and myself to the Lower Fitzroy, we found Fasciated Honey-eaters there. Judging by their pleasant notes, the birds were exceedingly merry but extremely shy. We obtained skins."

North identified the "Franklin Islands" bird later as the Varied Honey-eater, and Banfield refers also the Dunk Island bird under that name, but Cornwall regarded his identification as correct.

Campbell later received a bird, nest and eggs from Mr. G. A. Young, writing:

SCALY-THROATED HONEY-EATER.

"His field-note says that the species is plentiful in the mangroves bordering the Burnett River, where during the breeding-season the Honey-eaters were continuously calling and singing."

Cornwall later wrote from Mackay, North Queensland: "The Fasciated Honey-eater is another robust and noisy species. Although their favourite haunts are the mangrove patches on the islands close to the coast, they are often met with along the creeks and rivers, whilst odd pairs may be noted in some of our town gardens. Nests have been noted at Green Island, some twelve miles to the north of Mackay, where they are particularly abundant; and on 18th November, whilst visiting Victor Island, I found a pair of beautiful fresh eggs, and also saw a nest containing two young birds, which were nearly fledged. That their nesting-season is a much extended one is proved by the fact that Mr. H. Neilson, whilst visiting a Darter and Cormorant rookery in Thompson's Creek during the last Easter holidays, found fresh eggs of the Fasciated Honey-eater."

Accepting Moreton Bay, Queensland, as the type locality of the species, I named in my "Reference List" in 1912

Ptilotis fasciogularis brunnescens.

"Darker than *P. f. fasciogularis*, especially on the under-surface, and the upper-surface more brownish."

North Queensland.

In my 1913 "List" I synonymised this and referred the species to *Meliphaga*, but I would now admit the northern form as valid, allowing:

Dorothina fasciogularis fasciogularis (Gould).

Islands north of Moreton Bay, Queensland.

Dorothina fasciogularis brunnescens (Mathews).

North Queensland (Burnett River).

A Correction.—On p. 191, under the genus *Lichmera*, line 2, for "p. 2, Jan. 2nd," read "p. 263, Feb. 4th."

THE BIRDS OF AUSTRALIA

The following additions should be considered on the pages mentioned :—

Gliciphala melanops. TAWNY-FRONTED HONEY-EATER, p. 350.

Nearly adult female. Fore-part of head to a line behind the eye cinnamon; nape, hind-neck, sides of neck and mantle drab-grey; back and scapulars dark brown with broad olive margins to the feathers; rump and upper tail-coverts dull ash-grey; upper wing-coverts blackish with pale buff margins; bastard-wing similar, but the buff edging much narrower; primary-coverts and flight-quills also blackish with olive edgings on the outer webs becoming greyish-white on the innermost secondaries, the inner margins buff; tail dark brown slightly paler on the edges of the feathers; lores and a superciliary streak which extends along the sides of the crown white; rictal bristles, feathers in front of the eye, eye-ring, ear-coverts, sides of throat and sides of breast black with pale tips to the ear-coverts; a slightly indicated dark moustacial streak; chin white with black hair-like tips to the feathers and a patch of yellow feathers in the middle; lower throat, middle of breast, abdomen, and under tail-coverts white inclining to pale grey on the last; sides of body drab-grey; axillaries, under wing-coverts, and inner margins of flight-quills below cinnamon-rufous, remainder of quill-lining glossy blackish-brown; lower aspect of tail greyish-brown with pale shafts. Eyes rich brown, feet and bill blackish, throat whitish. Total length 160 mm.; culmen 17, wing 78, tail 68, tarsus 21. Collected at Coonalpyn, 90-mile desert, South Australia, on the 17th of May, 1911.

Immature female. Top of head, hind-neck, back, scapulars, rump, and upper tail-coverts blackish-brown with whitish shaft-streaks to the feathers, those on the rump have dark lead-grey bases; lesser and median upper wing-coverts dark brown with pale tips, the greater series margined with buffy-white; primary-coverts and flight-quills blackish-brown with yellowish-green edges to the outer webs and buff margins to the inner webs of the latter; tail hair-brown with pale edgings to the feathers; ear-coverts uniform dusky-brown becoming paler and inclining to whitish on the hinder part of the face; lores and eye-ring dusky-brown; cheeks whitish; chin and throat pale lemon-yellow with hair-like tips to the feathers on the former; a slightly indicated dark moustacial streak; fore-neck, sides of neck, breast and sides of body dusky-brown with whitish elongated centres to the feathers; thighs dusky; abdomen, vent, and under tail-coverts greyish-white; axillaries, under wing-coverts, and margins of flight-quills below cinnamon-rufous, remainder of quill-lining dark brown; lower aspect of tail similar but rather paler. Eyes dark brown, feet bluey-grey, bill brown. Collected at Middle Harbour, Sydney, New South Wales, on the 9th of April, 1910.

Immature female (younger). General colour of the upper-surface dark brown with white shaft-lines to the feathers on the top of the head, back, rump, and upper tail-coverts; upper wing-coverts also dark brown margined with buff; flight-quills blackish edged with yellowish-green on the outer webs and more broadly on the inner ones with buff; tail dark brown with pale edgings to the outer and inner webs; lores and feathers in front of the eye black and bristly in texture; ear-coverts uniform dusky-brown; cheeks whitish-yellow intermixed with dusky-brown; chin and throat lemon-yellow with dark hair-like tips to many of the feathers; fore-neck, breast, abdomen and sides of body blackish-brown with whitish elongated centres

ADDITIONS.

to the feathers, becoming fawn-buff on the lower flanks, thighs, vent and under tail-coverts; axillaries, under wing-coverts, and margins of quills below cinnamon-rufous; remainder of quill-lining dark brown; lower aspect of tail greyish-brown. Eyes bluish-grey, feet black, bill brown. Collected on Flinders Island, Bass Strait, on the 21st of November, 1912.

Immature (just out of nest). General colour of the upper-surface dusky blackish-brown with buffy-white shaft-streaks to the feathers, some of which widen out at the tips, including the top of the head, sides of the face, hind-neck, back, scapulars, rump, and upper tail-coverts, being paler on the last; wings darker than the back with buff edgings to the feathers; tail-feathers dark brown with pale edgings; lores and feathers encircling the eye dusky-brown; chin similar with hair-like tips to the feathers; throat yellowish-white; fore-neck whitish with wide dusky-brown margins to many of the feathers; the feathers on the cheeks are represented by white sheaths; abdomen and sides of body white; thighs dusky; under tail-coverts buffy-white; under wing-coverts and inner margins of quills below cinnamon-buff, remainder of quill-lining dark brown; lower aspect of tail similar but paler. Eyes muddy-brown, feet brownish-grey, soles pallid-white, bill brownish, throat and fleshy caruncle yellow-orange. Collected at Sydney, New South Wales, on the 6th of September, 1912.

Ramsayornis fasciatus. WHITE-BREASTED HONEY-EATER, p. 370.

Nestling. General colour of the upper-surface including the crown of the head, back, wings and tail dark brown with a rusty tinge, many of the feathers on the wings and tail are still in sheaths of pale lead-colour; sides of face buffy-white as are also the sides of the body; middle of throat, middle of breast, and middle of abdomen blackish with pale margins to the feathers; under tail-coverts pale buff. Eyes black, bill and feet yellow. Collected at Normanton, Gulf of Carpentaria, Queensland, on the 6th of March, 1914.

Conopophila rufogularis. RED-THROATED HONEY-EATER, p. 391.

Juvenile (just out of nest). General colour of the upper-surface pale rust-brown, including the top of the head, sides of the face, sides of neck, hind-neck, back, rump, upper tail-coverts, scapulars, upper wing-coverts, and innermost secondaries; inner webs of flight-quills hair-brown with yellow margins on the outer webs; tail similar but rather paler with very slight greenish-yellow edgings on the outer webs; under-surface greyish-white, including the chin, throat, breast, abdomen, and under tail-coverts; somewhat darker on the sides of the body and under wing-coverts. Collected at Normanton, Gulf of Carpentaria, Queensland, on the 6th of February, 1914.

Order PASSERIFORMES.

No. 670.

Family MELITHREPTIDÆ.

DOROTHINA FRENATA.

BRIDLED HONEY-EATER.

(PLATE 533.)

PTILODIS FRENATA Ramsay, Proc. Zool. Soc. (Lond.), 1874, p. 603, April 1st, 1875 :
Cardwell, North Queensland.

Ptilotis frenata Ramsay, Proc. Zool. Soc. (Lond.), 1874, p. 603, 1875 ; *id.*, *ib.*, 1875, p. 596,
1876 ; *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 189, 1878 ; Gould, Birds New
Guinea, pt. II. (Vol. III., pl. 49), Jan. 1st, 1876 ; Gadow, Cat. Birds Brit. Mus.,
Vol. IX., p. 231, 1884 ; Ramsay, Tab. List Austr. Birds, p. 13, 1888 ; Hall, Key
Birds Austr., p. 41, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 388,
1901 ; North, Austr. Mus. Spec. Cat. No. 1, Vol. II., p. 123, 1907 ; Mathews, Handl.
Birds Austral., p. 97, 1908 ; Broadbent, Emu, Vol. X., p. 238, 1910 ; Mathews,
Nov. Zool., Vol. XVIII., p. 413, 1912 ; Campbell and Barnard, Emu, Vol. XVII.,
p. 34, 1917.

Meliphaga frenata Mathews, List Birds Austr., p. 275, 1913.

Meliphaga frenata petersoni Mathews, Austral Avian Record, Vol. III., pt. 3, p. 62, April
7th, 1916 : Peterson's Pocket, Cairns, North Queensland.

Meliphaga frenata frenata Mathews, *ib.*

DISTRIBUTION. North Queensland. (Cairns and Cardwell districts only.)

Adult female. General colour of the upper-parts dark reddish-brown ; wings ashy-brown,
margined on the outer web with yellowish-green and on the inner web with reddish-
buff ; tail brownish-olive, lores blackish-brown ; a ring of white feathers tipped
with black surrounding the eye : a tuft of golden-yellow feathers behind the ear-
coverts succeeded below by a glossy-black patch ; chin smoky-brown ; throat smoky-
brown with an indistinct bar of dull yellowish-olive across the middle ; remainder
of the under-surface of the body smoky-grey ; under wing-coverts reddish-buff ;
under-surface of flight-feathers reddish-buff. Eyes black, feet slate, bill with yellow
base and rest black. Bare skin yellow. Total length 190 mm. ; culmen 16, wing 97,
tail 81, tarsus 24. Figured. Collected on the Barron River, North Queensland,
on the 2nd of March, 1913.

Adult male. Similar to the adult female.

Eggs. Two eggs usually form the clutch. A clutch of two eggs taken in the Barron River
scrubs at Tinaroo, North Queensland, on the 12th of November, 1908, is of a white



H. Grönvold, del.

Witherby & Co.

DOROTHINA FRENATA
 (BRIDLED HONEY-EATER)
 CALOPTILOTTIS MACLEAYANA
 (YELLOW-STREAKED HONEY-EATER)

BRIDLED HONEY-EATER.

ground-colour, spotted and blotched, particularly at the larger ends, with reddish-brown, brownish-grey, and purplish-grey. Ovals in shape. Surface of shell smooth and slightly glossy. 25 by 17 mm.

Nest. Cup-shaped, constructed of various climbing plants and portions of soft fern-stems, etc., and lined with fine fibre and other material. Dimensions over all nearly $4\frac{1}{2}$ inches across by nearly 3 inches in depth.

Breeding months. Probably October to January.

THIS is one of Ramsay's early discoveries, but his field notes are short: "A very distinct and interesting species, procured near the township of Cardwell, feeding among the blossoms of the *Eucalypti*. It appears to be very scarce, only three being observed during our stay of six months."

Broadbent later wrote: "Cardwell, in the winter time. This is a mountain bird; found it at 5,000 feet on Bellenden Ker, also round my camp at Herberton, highest country in the district. This is one of my new birds (1873) named by Dr. Ramsay."

Campbell and Barnard added very little to the above extremely scanty information regarding this species when they wrote: "This dark-coloured Honey-eater is another of the fine feathered 'citizens' of Cardwell, and one of the Broadbent discoveries. The discoverer states it 'is a mountain bird.' We observed it at the creek courses in the hills, at the rear of Cardwell. Small parties used to come to the rocky pools to bathe. Sometimes a bird would peer inquisitively from behind a branch at the intruder before it would momentarily splash into the clear water."

Campbell added: "I first saw this fine species in Dalrymple's Gap, 1885, where numerous birds were feasting on the long branching, dark red flowering spikes of a graceful umbrella tree (*Brassaia*)."

I named

Meliphaga frenata petersoni

as differing from the typical bird in not being so decidedly marked on the sides of the head.

GENUS—CALOPTILOTIS.

CALOPTILOTIS Mathews, Nov. Zool., Vol.
XVIII., p. 414, Jan. 31st, 1912. Type
(by monotypy) *Ptilotis macleayana* Ramsay.

THIS group was also named, when I prepared my "Reference List" in 1912, as obviously not congeneric with the other *Ptilotes*.

The bird belongs to the same series as the preceding genera, but has a comparatively shorter tail, long stout bill, longer than the head, stout legs and feet and a bare eye space. This last item is much developed in some New Guinea forms to which this Australian form is most closely allied. Note that this is another Cardwell form.

The culmen is little arched, the under mandible stout, and the edges of the mandibles anteriorly serrate quite noticeably.

The wing has the first primary short, but longer than half the second, which is equalled by the secondaries in length, the third, fourth, fifth and sixth primaries subequal and longest.

The legs are stout, the tarsus booted anteriorly and bilaminate posteriorly; the feet are larger, the anterior toes delicate but long, the hind-toe and claw stouter.

CALOPTILOTTIS MACLEAYANA.

YELLOW-STREAKED HONEY-EATER.

(PLATE 533.)

PTILOTTIS MACLEAYANA Ramsay, Proc. Linn. Soc. N.S.W., Vol. I., p. 10, April 27th, 1875 :
North-east Coast Australia = Cooktown *fide* A. J. Campbell.

Ptilotis macleayana Ramsay, Proc. Linn. Soc. N.S.W., Vol. I., p. 10, 1875 ; *id.*, Proc. Zool. Soc. (Lond.), 1875, p. 595, 1876 ; *id.*, Tab. List Austr. Birds, p. 13, 1888 ; Hall, Key Birds Austr., p. 41, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 389, 1901 ; North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 120, 1907 ; Mathews, Handl. Birds Austral., p. 95, 1908 ; Broadbent, Emu, Vol. X., p. 238, 1910 ; Mathews, Nov. Zool., Vol. XVIII., p. 405, 1912 ; Campbell, Emu, Vol. XIII., p. 69, pl. xiii., f. 12, 1913 (Eggs) ; Campbell and Barnard, *ib.*, Vol. XVII., p. 33, 1917.

Ptilotis flavostriata Gould, Proc. Zool. Soc. (Lond.), 1875, p. 315, Aug. 1st : Rockingham Bay, Queensland ; *id.*, Birds New Guinea, pt. II. (Vol. III., pl. 50), Jan. 1st, 1876 ; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 232, 1884.

Caloptilottis macleayana Mathews, List Birds Austr., p. 275, 1913.

Caloptilottis macleayana johnstoni Mathews, Austral Avian Record, Vol. III., pt. 3, p. 62, April 7th, 1916 : Cairns, Queensland.

Caloptilottis macleayana macleayana Mathews, *ib.*

DISTRIBUTION. North Queensland (Cooktown to Herbert River).

Adult male. Top of the head and sides of the neck black ; back of the neck blackish, spotted with white at the extremity of each feather ; upper back blackish-brown with rounded spots of yellowish ; mantle and lower back smoky-brown with a wedge-shaped mark of brownish-buff at the tip ; lower back and rump smoky-brown, narrowly margined with olive ; wing-coverts smoky-brown like the lower back ; wing-feathers and scapulars ash-brown slightly margined on the outer web with yellowish-olive ; tail-feathers smoky-brown, narrowly margined with yellowish-olive ; lores and feathers surrounding the eye light reddish-chestnut ; feathers behind the ear-coverts composed of golden-yellow feathers ; chin and throat yellowish-white ; upper neck and chest yellowish-olive, each feather terminating in a yellowish-white elongated spot ; breast yellowish-white with distinct blackish spots across each feather ; lower abdomen smoky-brown ; under wing-coverts and axillaries lemon-yellow ; inner lining of quills reddish-buff ; eyes brown, feet bluish, bill black. Total length 182 mm. ; culmen 24, wing 89, tail 72, tarsus 28. Figured. Collected on the Barron River, near Cairns, North Queensland, on the 11th of June, 1912.

THE BIRDS OF AUSTRALIA.

Adult female. Similar to the adult male.

“*Immature birds* resemble the adults, but are duller in colour; there is only a slight indication of the whitish tips to the feathers on the hind-neck, and the remainder of the markings on the upper-parts are less distinct; on the under-parts the feathers on the fore-neck and upper breast are almost a uniform dull olive-yellow and destitute of the narrow yellow central streaks.” (North.)

Eggs. Two eggs form the clutch. A clutch of two eggs, taken in the Tinaroo scrubs, west of Cairns, North Queensland, on the 2nd of December, 1909, is of a pale flesh-buff ground-colour, well spotted and blotched, particularly at the larger ends, with reddish-chestnut, intermingled with lilac and dull slate markings. Rather long ovals in form, surface of shell fine and glossy. 25–26 by 16 mm.

Nest. A deep cup-shaped structure, chiefly composed of fibre, leaves, etc., lined with fibre and rootlets, suspended by the rim and placed in a bush.

Breeding-months. October to end December.

RAMSAY described this species simultaneously with Gould, but his name appeared in print first. His field notes and full account reads: “This fine species is one I mentioned previously as *Ptilotis versicolor* Gould; and strange to say even the buffy adult birds show that peculiarity in the plumage which is usually characteristic of immaturity. At first I considered them all young *P. versicolor*; but after having obtained and examined, from several sources, extending over a period of six years, numerous fine specimens, all in similar plumage, and shot at various times through the year, I felt convinced that they belonged to a distinct species. The species has not a very extensive range, being confined, as far as we yet know, to the coast range from the Herbert River north to Cooktown on the Endeavour. I found them nowhere plentiful, and always of a shy and retiring disposition. The sexes are alike in plumage. The only note I heard them utter is a simple feeble cry resembling that of *P. chrysops*, but not so loud; in their actions and retiring disposition they resemble most *P. lewinii*.”

Broadbent simply wrote: “Common on Maunga Creek, Cardwell.”

Here again Campbell and Barnard failed to add anything of value to the above meagre account, satisfying themselves with the following report: “This rare and fine Honey-eater was of especial interest to us, as it was first collected here by Broadbent, and Gould described one of the specimens from Rockingham Bay in 1875 as *P. flavostriata*—a very descriptive name; but Ramsay anticipated him earlier in the year by a specimen from Cooktown with the name *P. macleayana*. It was interesting watching these birds feeding on the large, wreath-like whitish flowers of *Darlingia* and among the honey-laden flowers of a climbing *Pisomia*.”

No sub-species are yet definitely fixed, the Cairns bird I named as being darker being here synonymised until more birds are available.

GENUS—NESOPTILOTIS.

NESOPTILOTIS Mathews, Austral Avian Record,

Vol. II., pts. 2-3, p. 60, Oct. 23rd, 1913.

Type (by original designation) *Ptilotis flavigula* Gould.

I DIFFERENTIATED this group thus: "Differs from *Ptilotula* Mathews in its much longer wing and tail and much stronger feet, though the bill is as small as in that genus."

This is rather a peculiar little group with headquarters in Tasmania and a specialised offshoot on the mainland.

As shown by Hall, the island form has preserved more nearly the ancestral coloration, the yellow ear-coverts being fixed in the adult on the island species, and becoming white, a novel feature, in the whole series of "*Ptilotis*" on the mainland.

Key to the Species.

Chin yellow, ear patch yellow	..	..	..	<i>N. flavicollis.</i>
Chin black, ear patch white	..	..	..	<i>N. leucotis.</i>

Order PASSERIFORMES.

No. 672.

Family MELITHREPTIDÆ.

NESOPTILOTIS FLAVICOLLIS.

YELLOW-THROATED HONEY-EATER.

(PLATE 534.)

MELITHREPTUS FLAVICOLLIS Vieillot, Nouv. Dict. d'Hist. Nat., nouv. ed., Vol. XIV., p. 325, Sept. 13th, 1817: "Nouvelle Hollande" = King Island.

Melithreptus flavicollis Vieillot, Nouv. Dict. d'Hist. Nat., nouv. ed., Vol. XIV., p. 325, 1817.

Ptilotis flavigula Gould, Synops. Birds Austr., pt. iv., pl. (72), April 1st, 1838; South Tasmania; *id.*, Birds Austr., pt. xxx. (Vol. IV., pl. 35), March 1st, 1848; *id.*, Handb. Birds Austr., Vol. I., p. 508, 1865; Legge, Papers Proc. Roy. Soc. Tasm., 1886, p. 240, 1887.

Meliphaga flavigula Gray, Genera Birds, Vol. I., p. 122, 1846.

Meliphaga flavicollis Gray, Handl. Gen. Sp. Birds, Vol. I., p. 156, 1869.

Ptilotis flavicollis Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 189, 1878; *id.*, Tab. List Austr. Birds, p. 12, 1888; Mathews, Handl. Birds Austral., p. 96, 1908.

Ptilotis flavigularis Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 239, 1884; Hall, Key Birds Austr., p. 42, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 394, 1901; A. G. Campbell, Emu, Vol. II., p. 207, 1903 (King Island); McClymont, *ib.*, Vol. III., p. 57, 1903; Littler, *ib.*, p. 86; Fletcher, *ib.*, Vol. IV., p. 15, 1904; A. G. Campbell, *ib.*, p. 123; Dove, *ib.*, p. 170; *id.*, *ib.*, Vol. VI., p. 21, 1906; North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 125, 1907; Littler, Emu, Vol. VIII., p. 152, 1909; Dove, *ib.*, p. 153; Fletcher, *ib.*, Vol. IX., p. 251, 1910; Littler, Handb. Birds Tasm., p. 57, 1910; Thompson, Emu, Vol. XI., p. 40, 1911; Fletcher, *ib.*, p. 106.

Ptilotis flavigula Mellor and White, *ib.*, Vol. XII., p. 163, 1913: Flinders Island; Dove, *ib.*, Vol. XVII., p. 53, 1917; Lord, *ib.*, Vol. XIX., p. 106, 1919.

Ptilotis flavicollis flavicollis Mathews, Nov. Zool., Vol. XVIII., p. 407, 1912.

Ptilotis flavicollis flavigula Mathews, *ib.*

Nesoptilotis flavicollis flavicollis Mathews, List Birds Austr., p. 275, 1913.

Nesoptilotis flavicollis flavigula Mathews, *ib.*, p. 276.

Nesoptilotis flavicollis flindersi Mathews, Austral Avian Record, Vol. III., pt. 3, p. 62, April 7th, 1916: Flinders Island.

DISTRIBUTION. Tasmania and the islands of Bass Straits only (King Island and Flinders Group).

Witherby & C^o

NESOPTILOTTIS LEUCOTIS
(WHITE-EARED HONEY-EATER.)

NESOPTILOTTIS FLAVICOLLIS
(YELLOW-THROATED HONEY-EATER.)



H Grönvold, del

YELLOW-THROATED HONEY-EATER.

Adult male. Head above and sides of the head blackish silky-grey, slightly streaked with black, a small tuft of primrose-yellow feathers behind the ear; neck, mantle, rump, upper tail-coverts, wing-coverts and secondaries uniform golden-olive; tail-feathers golden-olive with bright edges; chin, throat and edge of wing gamboge-yellow; sides of neck, chest and breast smoky-grey, slightly tinged with greenish-olive; lower abdomen and under tail-coverts whitish-yellow; axillaries and under wing-coverts bright yellow; under-surface of quills ash-grey, washed with olive and margined on the inner web with buff; under-surface of tail uniform golden-olive, slightly margined on the outer web with deeper golden-olive. Eyes light red, feet slate, bill black. Total length 210 mm.; culmen 15, wing 108, tail 102, tarsus 27. Figured. Collected on King Island, Bass Strait, on the 2nd of May, 1914.

Adult female. Similar to the adult male.

Young male. Top of head dusky-brown with a greyish tinge; lores and a line below the eye blackish, feathers behind the eye glossy greyish-brown; ear-coverts pale sulphur-yellow; nape and hind-neck dark smoke-brown; entire back, wings, and tail dull yellowish-green; flight-quills blackish-brown with pale margins; chin and throat pale yellow; sides of throat, sides of neck, and fore-neck olive-grey; breast, abdomen, sides of body, thighs, and under tail-coverts ochreous-yellow; axillaries and under wing-coverts yellowish-buff; under-surface hair-brown with pale margins; lower aspect of tail paler than its upper-surface—especially the shafts of the feathers. Eyes dark greenish-slate (like the surrounding feathers), feet slate-grey, soles yellowish, bill black, throat orange. Collected on Flinders Island, Bass Straits, on the 21st of November, 1912.

Young male. Head dull greenish-brown with rufous-brown down still adhering to the feathers like those of the lower back; back dull olive-green becoming yellowish-green on the wings and tail; a line above ear-coverts slate-grey; chin and a spot on the upper edge of the ear-coverts bright yellow; quills dark brown with greenish-yellow on the outer webs; fore-neck and breast dusky-yellow, becoming brighter yellow on the abdomen, under tail-coverts and under wing-coverts. Collected at Glenorchy, Tasmania.

Immature. Top of head, lores, and nape dull blackish-brown; hind-neck inclining to smoke-brown; back, wings, and tail dark yellowish-green; inner webs of flight-quills dark brown with pale buff margins; chin, throat, and tips of ear-coverts lemon-yellow; fore-neck, sides of neck, breast, and sides of body dark slate-grey, tinged with ochre on the sides of the abdomen, thighs, and under tail-coverts; axillaries dull yellow; under wing-coverts yellowish-buff; under-surface of flight-quills similar to their upper-surface but paler; lower aspect of tail similar to its upper-surface, the shafts are also pale—not black. Eyes hazel, feet bluish-flesh, bill black. Collected at Devonport, Tasmania, on the 15th of February, 1909.

Eggs. Two to three eggs form the clutch. A clutch of three taken at St. Helens, Tasmania, on the 18th of November, 1893, is of a pale pinkish-white ground-colour, marked, chiefly at the larger ends, with rounded spots of reddish-brown and purplish-grey. Ovals in shape. Surface of shell fine and smooth, and rather glossy. 23–24 by 16 mm.

Nest. Rather a deep cup-shaped structure, composed of bark, grasses, etc., and lined with fur or other soft material, and placed in a small bush or thickly foliated tree. Dimensions over all, 4 to 4½ inches by 3½ to 3¾ inches deep.

Breeding-months. July to end November (to January).

THE BIRDS OF AUSTRALIA.

GOULD described nearly every species of *Ptilotis* and then left it for others to work out how many had been previously well described by both English and French workers. He did not pay sufficient attention to other collections, or literature, of which his knowledge was very scanty, but simply went ahead with his own birds, naming everything as distinct. This species was well described and the specimen was available for study in the Paris Museum. His field notes are, however, the earliest on record as he wrote: "This fine and conspicuous species of *Ptilotis* is abundant in all the ravines round Hobart Town, and is very generally dispersed over the whole of Tasmania. If I mistake not I have also seen specimens from Victoria. Its colouring assimilating in a remarkable degree with that of the leaves of the trees it frequents, it is somewhat difficult of detection. When engaged in searching for food it frequently expands its wings and tail, creeps and clings among the branches in a variety of beautiful attitudes, and often suspends itself to the extreme ends of the outermost twigs. It flies in an undulating manner like a Woodpecker, but this power is rarely exercised. Its note is a full, loud, powerful, and melodious call. The stomach is muscular, but of a very small size, and the food consists of bees, wasps, and other Hymenoptera, to which are added Coleoptera of various kinds, and the pollen of flowers. It is a very early breeder, as proved by my finding a nest containing two young birds covered with black down, and about two days old, on the 28th of September."

Captain S. A. White has written me: "This bird is to be met with in most of the timbered districts of Tasmania which I have visited, and upon one or two occasions when there were no flowering trees for these birds to procure honey they seemed to be subsisting entirely on insect food which they were obtaining from the foliage, under bark, from cracks in tree trunks and even from the ground. I met with it on King Island where it is quite a common bird, and in the very early morning several male birds would perch upon the high dead tops of trees giving forth their loud calls."

Mr. Frank Littler has sent me the following note: "This species is fairly well distributed over Tasmania and the larger Islands in Bass Straits, favouring fairly heavily timbered country. The food is various kinds of insects obtained from under the bark of the trees as well as flies, drone flies, etc. It performs many pretty antics when searching the tree trunks for food. The song is a loud whistle-like call-note often repeated. The favourite position when uttering this call-note is on the topmost twig of some sapling. Young able to fly had tail-feathers about three-quarters of an inch long. The under- and upper-surfaces were greyish, not having attained the yellowish tinge. The wings were paler than in the adult stage, while the eyes were very dark."

YELLOW-THROATED HONEY-EATER.

Miss J. A. Fletcher has also written: "On Sept. 21, 1909, I watched a male feeding his sitting mate. As he approached the nest he gave a peculiar call and she hopped from the nest on to a twig near by, received food and returned to nest while he flew away. On examining nest found she was sitting on two eggs, one was heavy, the other light, and the latter afterwards proved addled. I found several of the nests in sword-grass tussocks, three being the general complement of eggs."

Mr. H. S. Dove wrote me: "Once visiting a white-gum hill a few miles from Launceston, Northern Tasmania, I found numbers of this beautiful bird nesting among the *Lepidosperma* tussocks with which the side of the hill was covered. The first nest was easily seen, no attempt having been made at concealment; it was situated about one foot from the earth in a smallish tussock, and was cup-shaped, deep, formed of strips of the bark of the young white gums and of grass, lined with about equal parts of cow hair and sheeps' wool; it contained two eggs. Another nest was placed in a larger tussock, a little higher up from the earth and was fairly well hidden under loose strips of fallen gum bark; this nest was very deep, so that the female was almost concealed as she sat, only her head and gamboge throat showing at one end and her tail at the other. She sat without a movement while we watched, and allowed the camera to be placed within a yard without betraying any fear. A third nest had three eggs just chipping on Oct. 28, and on Nov. 2 there were three young, partly covered with blackish down, eyes still closed."

Mr. J. W. Mellor writes me: "The Yellow-throated Honey-eater I have seen in all parts of Tasmania, as it is common, especially in the thickly wooded parts, where its loud liquid notes are heard to advantage amongst the timber. I have seen it in the deep recesses and gullies about Mount Wellington in the extreme south and in the ravines of Mt. Arthur and Mt. Barrow in the north. I also came across it on the elevated plateau of the Great Lake in the central portion of the island, and I also saw it on Flinders Island among the wooded parts where plenty of bush grew beneath the high timber. The nest is cup-shaped and hanging, the eggs usually three in number, and the breeding-season November to January, but sometimes clutches are found as early as September. The food is chiefly honey, but also insects, flies, etc., caught on the wing and also among the foliage of the trees and shrubs."

Littler has published a complete account covering the short note he sent me with more detail, and Miss Fletcher and Dove have also added to the literature with notes worth quoting, but space will not permit all these being here given.

Miss Fletcher has observed: "During the breeding-season keeps in pairs to a particular and restricted spot. Here they build their nests. Their loud, cheerful call quickly betrays the locality, and a little patience on the

THE BIRDS OF AUSTRALIA.

part of the watcher will result in the finding of the nest. One evening I watched one of these birds filling its mouth with hairs from the back of a cow. A tug and a hop, a tug and a hop, and as soon as it had sufficient of this unpleasant tickling burden it flew off to a clump of tree-ferns. I followed it, and in a little time found the nest artfully concealed in the dead pendent fronds of a tree-fern. A visit paid to it a week afterwards found the bird sitting on two eggs."

Another item from Dove's notes may be quoted: "During the month of August, 1916, I had the pleasure of accompanying Mr. H. C. Thompson to a gum-tree hill which is used by several pairs of the Yellow-throats as a breeding ground. The bush thereabouts looked very beautiful with white clematis and blue *Comesperma* twining among the scrub, while maidenhair fern grew in profusion over the moist soil. The nests of the Honey-eaters were placed in large *Lepidosperma* tussocks, and were of the open cup pattern. A pair of adults fed their young on the ground close to us; the latter were lately fledged, and had yellow throats and ear-tufts, were of a yellowish tint on the upper-surface, the head darker than in the adult, but a tuft or two of nesting down still remained there. The parents were in beautiful golden plumage. The female almost alighted on us when my friend took one of the youngsters in his hand, and the melodious call-notes of this species resounded through the grove."

A. G. Campbell, recording the species from King Island, wrote: "Inhabits the dense scrubs. Its note and all its habits are similar to *P. leucotis* of the mainland." Later he added: "This, the only Tasmanian representative of the genus, appears to be the insular form of *P. leucotis* (White-eared Honey-eater). A comparison of specimens from King Island and Tasmania shows a heavier tarsus from the former locality."

When I prepared my "Reference List" I noted the differences between the King Island and Tasmanian birds, and recognising that many of the specimens referred to "Nouvelle Hollande" had been collected on King Island concluded that this was one such, and designated King Island as the type locality of Vieillot's *M. flavicollis* and thus preserved Gould's name of *flavigula* for the mainland form.

I admitted these two subspecies in my 1913 "List," but placed them in the genus *Nesoptilotis*, and have named since

Nesoptilotis flavicollis flindersi.

"Differs from *N. f. flavicollis* (Vieillot) in having the yellow throat not so pronounced."

Flinders Island
and the three subspecies may still be admitted.

Order PASSERIFORMES.

No. 673.

Family MELITHREPTIDÆ.

NESOPTILOTTIS LEUCOTIS.

WHITE-EARED HONEY-EATER.

(PLATE 534.)

Turdus leucotis Latham, Index Ornith. Suppl., p. xliv., (after May 30th) 1801 : New South Wales.

Turdus leucotis Latham, Index Ornith. Suppl., p. xliv., 1801.

White-eared Thr(ush) Latham, Gen. Synops. Birds, Suppl. II., p. 373, 1801.

Meliphaga leucotis Vigors and Horsfield, Trans. Linn. Soc. (Lond.), Vol. XV., p. 314, 1827.

Ptilotis leucotis Gould, Birds Austr., pt. xxv. (Vol. V., pl. 36), Dec. 1st, 1846 ; *id.*, Handb.

Birds Austr., Vol. I., p. 510, 1865 ; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 189, 1878 ; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 240, 1884 ; Ramsay, Tab. List Austr. Birds, p. 12, 1888 ; Hall, Key Birds Austr., p. 42, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 396, 1901 ; Hill, Emu, Vol. II., p. 164, 1903 (Vic.) ; Hall, *ib.*, Vol. III., p. 43 ; Milligan, *ib.*, p. 234, 1904 ; A. G. Campbell, *ib.*, Vol. V., p. 143, 1906 (King Island) ; Hill, *ib.*, Vol. VII., p. 18, 1907 (Vic.) ; North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 144, 1907 ; Mathews, Handl. Birds Austral., p. 96, 1908 ; Gibson, Emu, Vol. IX., p. 75, 1909 (S.W.A.) ; Cleland, *ib.*, p. 225, 1910 (Food) ; Howe, *ib.*, p. 233 (Vic.) ; Maddison, *ib.*, p. 255 (Vic.) ; Cleland, *ib.*, Vol. XI., p. 91, 1911 (Food) ; S. A. White, *ib.*, Vol. XII., p. 180, 1913 (Mallacoota) ; Stone, *ib.*, Vol. XVII., p. 110, 1917 (Vic.) ; D'Ombraïn, *ib.*, p. 155, 1918 (N.S.W.).

Philedon melanodera Quoy and Gaimard, Voy. de l'Astrol., Zool., Vol. I., p. 191, pl. 8, f. 1, (pref. June 29th) 1830 : Western Port, Victoria.

Ptilotis novænorciæ Milligan, Emu, Vol. III., pt. IV., p. 226, April 2nd, 1904 : Wongan Hills, West Australia ; *id.*, *ib.*, Vol. IV., p. 10, 1904 ; Mathews, Handl. Birds Austral., p. 96, 1908 ; Crossman, Emu, Vol. IX., p. 90, 1909 (W.A.) ; Wilson, *ib.*, Vol. XII., p. 38, 1912 (S.A.) ; H. L. White, *ib.*, p. 193 ; Chandler, *ib.*, Vol. XIII., p. 43, 1913 (Vic.).

Ptilotis leucotis leucotis Mathews, Nov. Zool., Vol. XVIII., p. 407, Jan. 31st, 1912.

Ptilotis leucotis depauperata Mathews, *ib.* : Coonalpun, South Australia ; Mathews, Austral Av. Rec., Vol. I., p. 62, 1912.

Ptilotis leucotis novænorciæ Mathews, *ib.*, p. 408.

Ptilotis leucotis munna Mathews, Austral Avian Record, Vol. I., pt. 2, p. 50, April 2nd, 1912 : Kangaroo Island.

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Ptilotis leucotis torringtoni Mathews, *ib.*, pt. 3, p. 80, June 28th, 1912 : Tarrington, North New South Wales.

Ptilotis leucotis melanodera Mathews, *ib.*

Ptilotis leucotis thomasi Mathews, *ib.*, pt. 4, p. 99, Sept. 18th, 1912 : new name for *P. l. munna* (not *P. ornatus munna* Mathews, Nov. Zool., Vol. XVIII., p. 410, Jan. 31st, 1912).

Ptilotis leucotis mallee Mathews, *ib.*, pt. 8, p. 193, March 20th, 1913 : Mallee, Victoria.

Nesoptilotis leucotis leucotis Mathews, List Birds Austr., p. 276, 1913.

Nesoptilotis leucotis torringtoni Mathews, *ib.*

Nesoptilotis leucotis melanodera Mathews, *ib.* ; Belcher, Birds Geelong, p. 339, 1914.

Nesoptilotis leucotis mallee Mathews, List Birds Austr., p. 276, 1913.

Nesoptilotis leucotis depauperata Mathews, *ib.*

Nesoptilotis leucotis thomasi Mathews, *ib.*

Nesoptilotis leucotis novænorciæ Mathews, *ib.*

Nesoptilotis leucotis woolandra Mathews, Bulletin Brit. Ornith. Club, Vol. XLIII., p. 13, Oct. 27th, 1922 : Woolundra, South-west Australia.

DISTRIBUTION. South Queensland, New South Wales, Victoria, South Australia, Kangaroo Island and South-west Australia.

Adult male. Feathers of the top of the head dark grey, each feather mesially streaked along the shaft with blackish ; back of the neck, mantle, rump, upper tail-coverts, wing-coverts and secondaries bright greenish-olive ; flight-feathers ashy-brown, margined on the outer web with bright olive-green ; tail-feathers ash-brown, each feather widely margined on the outer web with dark greenish-yellow ; feathers in front of and behind the eye blackish, a large elongated patch of silvery-white feathers on the sides of the face ; chin, throat and fore-neck black, the grey bases of the feathers showing through on the chin and throat, giving these parts a somewhat grey appearance ; sides of the neck, chest and body dark greenish-olive tipped with golden-yellow ; middle of belly light golden-yellow ; under tail-coverts whitish-yellow ; under-surface of wings ash-brown, margined on the inner web with rich buff. Eyes buff, feet and bill black. Total length 210 mm. ; culmen 15, wing 102, tail 96, tarsus 25. Figured. Collected at Selby, Victoria, on the 5th of April, 1912.

Adult female. Similar to the adult male.

Immature. Top of head and nape dark brown with bronze-green margins to the feathers ; lores, superciliary-streak, and patch below the eye blackish like the sides of the neck ; ear-coverts pale sulphur-yellow ; entire back, wings, and tail yellowish-green ; inner webs of flight-quills blackish-brown with buff margins ; tail-feathers similar with dark inner webs, pale tips, and black shafts ; chin, throat, and fore-neck blackish, more or less tinged with dark slate-grey ; breast and sides of body yellowish-green more or less tinged with lead-grey on the latter ; middle of abdomen and under tail-coverts yellow ; axillaries, under wing-coverts, and inner margins of flight-quills below pale buff, remainder of quill-lining hair-brown ; lower aspect of tail yellowish-green. Collected on the Murray River (Murray Bridge) in 1900.

Juvenile. General colour of the upper-surface including the top of the head, back, wings, and tail bronze-green, ear-coverts pale lemon-yellow ; chin and throat dusky-brown, becoming bronze-green on the breast, fading off into dull yellow on the abdomen, sides of body, thighs, and under tail-coverts ; under wing-coverts pale

WHITE-EARED HONEY-EATER.

buff; under-surface of flight-quills pale brown; lower aspect of tail similar to its upper-surface. Collected in Torquay in Victoria on the 31st of December, 1902.

Nest. Cup-shaped, situated in a fork of a tree, low down. Composed of fine pieces of bark, joined together with cocoons. Lined with hair. Outside measurements, 4 to 5 inches deep by almost 4 wide. Inside, 2 inches deep by $2\frac{1}{4}$ wide.

Eggs. Two to three eggs form the clutch. A clutch of three eggs taken at Somerville, Victoria, on the 27th of September, 1904, is of a pale flesh-tint ground-colour, spotted and blotched with pinkish-red and reddish-brown, becoming more numerous at the larger ends. Swollen ovals in shape. Surface of shell smooth and slightly glossy. 21 by 15 mm. Frequently the ground-colour of the eggs of this species is white.

Nest. An open cup-shaped structure, composed of thin strips of bark, grasses, etc., and well bound together with cobwebs, and lined with fur, or other warm material. As a rule the nest is built near the ground in a bush or small tree. Dimensions over all, 4 inches by 3 inches in depth.

Breeding-months. July to early December.

THIS was one of the earliest "*Ptilotis*" to be described as will be hereafter shown.

Vigors and Horsfield recorded it, writing: "One of the specimens of this species in the Society's collection was procured by Mr. Brown at Shoalwater Bay in 1802. The species, as well as the next (*chrysops*), are noticed by Mr. Caley as being by no means uncommon, but he has made no remarks upon their manners."

Gould's notes read: "The White-eared Honey-eater enjoys a very wide range of habitat; I found it in abundance in the belts of the Murray and other parts of South Australia, and in the brushes near the coast as well as in the open forests of *Eucalypti* in New South Wales; it is very common in the Bargo brush on the road to Argyle, and Gilbert mentions that he shot a specimen near York in the interior of Western Australia, but it is there so rare that he believed the individual he procured was the only one that had been seen. It is as much an inhabitant of the mountainous as of the lowland parts of the country, and is always engaged in creeping and clinging about among the leafy branches of the *Eucalypti*, particularly those of a low or stunted growth. Its note is loud, and very much resembles that of the *Ptilotis penicillata*. The stomach is small and membranous, and the food consists of insects of various kinds."

Mr. Thos. P. Austin has written from Cobbora, New South Wales: "A bird which might be more common than it appears. Some years they appear to be more plentifully dispersed than others, but only met with here in the heavy timbered dry scrubby country. Owing to its habit of keeping in the thick undergrowth, and being rather shy and wary, it frequently escapes notice, but if one keeps quiet the bird's natural curiosity will bring

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it in view, but with the least movement of the observer it darts away into the depths of the undergrowth. It has a loud clear call, which can be heard a considerable distance away, but it also has another double short note somewhat resembling 'chop-chop.' Their nests are most difficult to find, usually placed in thick undergrowth, within a couple of feet of the ground. In some cases the sitting bird will slip away at the slightest sound of danger, while I have known others to remain upon the nest until I have almost put my hand upon them. Two eggs are usually the clutch, but they sometimes lay three, and they are frequently the host of the Pallid Cuckoo."

Mr. F. E. Howe has also written me from Victoria: "This pretty Honey-eater is evenly distributed throughout the district. In the autumn and winter it feeds largely on insects that abound in the saplings, and although I have often watched it closely could never see the food it takes. On the 23rd August, 1908, we were much interested in watching a pair build their somewhat substantial nest. Both birds were very busy and made four visits (two each) in as many minutes, and it was noticed that as each bird arrived it was always careful to perch on a certain branch of a tea-tree before flying into the shrub that held the nest. This nest took a fortnight to build and incubation fifteen days. The young were hatched blind and featherless and at about sixteen days old they left the nest. When nesting, this bird is very timid and they have been known to leave the nests merely because they had been discovered, and build elsewhere. Twice we have noticed them desert the nest because the egg of *Cuculus inornatus* was placed in it, a trait of *P. chrysotis*, the latter once tearing the nest to pieces."

Dr. Cleland wrote me: "Found at Kunayong, New South Wales. The note is deep toned and more prolonged than would be expected from the size of the bird."

Mr. J. W. Mellor's notes read: "The White-eared Honey-eater is not so commonly known in South Australia as some of its allies, yet in certain localities it is fairly abundant, but by no means plentiful; its habits are somewhat retiring and it keeps to the bush and is therefore not seen to the same extent as some of the other species. I noted it in the mallee scrub country in the Cleve Ranges in Central Eyre Peninsula in June, 1911, and during the same month also saw it at Arno Bay and other places. While visiting Kangaroo Island I have seen this bird in various places, notably at Cape Borda in the extreme western end and at Middle River on the centre of the north coast, and out from Hog Bay on the eastern end of the island. Its habits here correspond with those on the mainland, as the bird seems to keep to the scrub and thus secures plenty of food in the honey obtainable from the flowers of the mallee, which are blooming more or less all the year

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round in various localities. It however eats numbers of insects that come about such thickly clothed districts."

Captain S. A. White's notes read: "This bird has a very wide range, for the writer has met with it from Queensland to West Australia as well as on many of the islands. It is plentiful on Kangaroo Island, and its frog-like croaking voice is to be heard on all sides, especially in the vicinity of the central swamps. It is a strange bird, for it is to be met with in a very varied environment, as one might take it to be a lover of swampy damp localities, yet it seems quite at home in the dry mallee country; then again it is to be found in heavily timbered country and yet the open heath country contains them. Their food consists of insects, berries and honey."

A. G. Campbell, recording this species from Kangaroo Island, wrote: "This was found only in the thick scrub near the river, from which it loved to ascend the gum-tree butts in search of food. It has a bill larger by .13 in. than the mainland bird, and is of a slightly darker tone."

G. F. Hill wrote of the Ararat District, Victoria: "Numerous at the foot of the mountains, but scarce in most other localities. They arrive in the early spring and leave again when the nesting season is over."

Maddison has written: "I found the nest of a pair of White-eared Honey-eaters (*Ptilotis leucotis*) with a single young one perched above it apparently about 12 days out of the egg. The nestling's general colour was greyish-green; fourth primary in wings white; greyish-white blotch on side of head; tail very short."

Wilson wrote: "I obtained two skins at Kow Plains which I think must be referable to this Western Australian species. It will, however, be necessary to get more skins to ascertain if the differences are constant. Three clutches of eggs were obtained which are considerably smaller than those met with in Southern Victoria. Both Mr. Howe and myself also noticed that the call notes of this bird were not so loud as those we were accustomed to hear of *P. leucotis*."

Chandler, however, observed: "A common bird in the district (Kow Plains). I mistook it for *P. leucotis*, but Mr. A. J. Campbell places it as the Western form. I could trace no difference in the notes of this bird, and the nest is similar in every respect to that of *P. leucotis*. The eggs appear to be smaller. They are pugnacious birds, and savagely drive any intruding bird from the vicinity of the nest."

When Milligan described the Western "species" he wrote: "At first sight I pronounced it, but with reservation, to be *Ptilotis leucotis*, although it appeared to be much smaller and not so brightly coloured as the Eastern form. Subsequent comparison showed distinct modifications in structure

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and colour disposition. . . At the time I was surprised to see it running agilely up the trunk of a tree extracting, as it ran, insects from the bark crevices. Its pace was quite as quick as that of a Tree-creeper, but instead of ascending spirally, after the manner of that bird, it ran vertically up the face of the trunk. Afterwards we secured many more specimens, including fledglings. Objection may be taken to my elevating the new bird to the rank of a species."

Hall, in the *Emu*, Vol. III., p. 43, 1903, has detailed the Plumage Phases of this species, to which the reader is referred: "The most important phases, and those which supply new information are *a* and *b*, the skin *a* being the nestling, with yellow ear-coverts, and *b* an immature bird with ear-coverts partly yellow and partly white, in about equal proportions. In another skin the yellow is simply a wash upon a portion of the white, while in a third a flush of yellow is nearly visible."

As already noted this is most important as it proves the island form to be closely related and to have retained the juvenile style of ear-covert coloration which is lost on the mainland. Though Milligan stated he procured fledglings of his West Australian form he did not describe them, but apparently they did not, at the age he secured them, show the yellow ear-coverts, or he would have mentioned them.

This species was apparently described from General Davies' drawings, the details, as far as is yet known, of which are recorded in the *Austral Avian Record*, Vol. IV., pts. 4 and 5, Dec. 1920, pp. 114 *et seq.* On account of the white ear-coverts, a peculiar feature in the group, it was a readily recognizable form and consequently Gould did not rename it. It was, however, named by Quoy and Gaimard from specimens collected at Western Port, Victoria, but no division of the species was attempted until Milligan named the West Australian form on account of its smaller size and duller coloration. Milligan correctly anticipated its recognition as a subspecific form only, and when I prepared my "Reference List" in 1912 I gave it this rank and added a third, recording:

Ptilotis leucotis leucotis (Latham).

New South Wales.

Ptilotis leucotis depauperata Mathews.

"Differs from *P. l. leucotis* in its smaller size (wing 82 mm.) and lighter colour below. Coonalypun, S.A."

Victoria, South Australia.

Ptilotis leucotis novænorciæ Milligan.

West Australia.

Almost immediately afterwards I named

Ptilotis leucotis munna.

WHITE-EARED HONEY-EATER.

"Differs from *P. l. depauperata* in being smaller and having a lighter coloured head. Kangaroo Island."

and

Ptilotis leucotis torringtoni.

"Differs from *P. l. leucotis* in its very yellow abdomen. Torrington, New South Wales (near the Queensland border).

At the same time I revived Quoy and Gaimard's name for the South Victorian bird, calling it

Ptilotis leucotis melanodera.

I then had to rename the Kangaroo Island bird

Ptilotis leucotis thomasi,

as through an oversight I had used the same subspecific name twice.

The Victorian Mallee bird was then named

Ptilotis leucotis mallee.

"Differs from *P. l. melanodera* (Q. and G.) in having a smaller white ear patch, heavier bill and darker upper-surface."

With the necessary transference to the genus *Nesoptilotis* these were arranged in the same way in my 1913 "List," seven subspecies being admitted:

Nesoptilotis leucotis leucotis (Latham).

New South Wales.

Nesoptilotis leucotis torringtoni (Mathews).

Northern New South Wales, Queensland.

Nesoptilotis leucotis melanodera (Quoy et Gaimard).

Victoria.

Nesoptilotis leucotis mallee (Mathews).

Mallee country of Victoria.

Nesoptilotis leucotis depauperata (Mathews).

South Australia.

Nesoptilotis leucotis thomasi (Mathews).

Kangaroo Island.

Nesoptilotis leucotis novænorciæ (Milligan).

(Wongan Hills) South-west Australia.

and also

Nesoptilotis leucotis woolundra Mathews.

(Woolundra) South-west Australia.

GENUS—HEMIPTILOTIS.

HEMIPTILOTIS Mathews, Austral Avian Record,
Vol. I., pt. 5, p. 127, Dec. 24th, 1912. New
name for *Trichodere* North. Type (by original
designation) *Ptilotis cockerelli* Gould.

Trichodere North, Ibis, 1912, p. 120 (Jan. number,
publ. Feb. 7th). Type (by original designation) *Ptilotis cockerelli* Gould.

Not—

Trichoderes Guerin, Mag. de Zool., 1843, p. 35.

WHEN Gould introduced this species he wrote: "Although I have placed this beautiful new species in the genus *Ptilotis*, I am by no means certain that I am correct in so doing; for the bird possesses characters which ally it to at least three genera, namely, *Stigmatops*, *Meliphaga* and *Ptilotis*, while it also possesses characters peculiar to itself of almost sufficient importance to demand a distinct generic appellation."

Forty odd years afterward North, receiving information, eggs and nest from McLennan and Macgillivray indicating its likeness to *Glyciphila*, quoted Gould's account and proposed a new genus, *Trichodere*, on account of the hair-like appearance of the feathers on the throat and fore-neck, without any further details.

The bird is of medium size for a "*Ptilotis*," larger than the Australian "*Glyciphila*," with flat head, long bill, long wings, long square tail and small legs and feet.

The bill is longer than the head, nearly straight, culmen gently arched and tip depressed; nasal and rectal bristles few and small; nasal groove long but not half the length of the bill, nostrils linear pervious, strongly operculate; bill laterally compressed with little basal expansion; the interramal space small and feathered, about one-third the length of the under mandible; gonys almost straight, not marked, sloping a little anteriorly.

Wing long, with the third, fourth, fifth and sixth primaries subequal and longest, the seventh a little shorter but longer than second; the first primary short, more than half the length of the second, but less than half the

HEMIPTILOTIS.

length of the third; the secondaries long but noticeably shorter than the second primary.

The tail is long and square.

The legs are short, the front of the tarsus scutellate, the hind portion bilaminate; the toes are small, the hind-toe longest, the outer toe longer than the inner, the inner toe and claw longer than the middle toe alone; claws long and sharp.

As well as the hair-like feathers of the throat and fore-neck, I note that the ear-coverts present a hairy appearance.

Order PASSERIFORMES.

Family MELITHREPTIDÆ.

No. 674.

HEMIPTILOTIS COCKERELLI.

WHITE-STREAKED HONEY-EATER.

(PLATE 535.)

PTILOTIS COCKERELLI Gould, Birds Austr. Suppl., pt. V., pl. 43, Aug. 1st, 1869: Cape York, Queensland.

Ptilotis cockerelli Gould, Birds Austr. Suppl. (pt. v.), pl. 43, Aug. 1st, 1869; *id.*, Ann. Mag. Nat. Hist., Ser. IV., Vol. IV., p. 109, 1869; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 189, 1878; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 241, 1884; Ramsay, Tab. List Austr. Birds, p. 13, 1888; Hall, Key Birds Austr., p. 42, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 397, 1901; Mathews, Handl. Birds Austral., p. 96, 1908; *id.*, Nov. Zool., Vol. XVIII., p. 408, 1912; Macgillivray, Emu, Vol. XI., p. 214, 1912.

Trichodere cockerelli North, Ibis, Feb. 7th, 1912, p. 120, Jan.; Mathews, List Birds Austr., p. 277, 1913; Macgillivray, Emu, Vol. XIII., p. 179, 1914; North, Austr. Mus. Sp. Cat., No. 1, Vol. IV., pt. v., p. 435, 1914; Macgillivray, Emu, Vol. XVII., p. 206, 1918.

Hemiptilotis cockerelli Mathews, Austral Avian Record, Vol. I., pt. 5, p. 127, 1912.

Trichodere cockerelli jardinei Mathews, *ib.*, Vol. III., pt. 4, p. 71, July 21st, 1917: Jardine Creek, North Queensland.

Trichodere cockerelli cockerelli Mathews, *ib.*

DISTRIBUTION. North Queensland, Cape York Peninsula only.

Adult male. Top of head and lores greyish-black; sides of the head brownish-black, tinged with grey; elongated ear-tufts golden-orange; back of the neck, mantle, lower back, rump, upper tail-coverts and secondaries olive-brown, each feather with a dusky centre; flight-feathers and tail dusky-brown, margined on the outer web with dull greenish-yellow, the latter with the inner web rusty-buff; a line of golden yellow feathers on the malar region; feathers of the chin, throat, fore-neck and chest long and lanceolate, dark grey at the base, white at the extremity; sides of the breast white, with a dusky-black spot in the middle of each feather; flanks white with a dark brown mesial-streak; middle of the belly and under tail-coverts white; under-surface of wings brownish-ash, the inner webs with a wide margin of rusty-buff; axillaries and under wing-coverts white tinged with yellow; under-surface of tail brownish-ash with white shafts. Total length 160 mm.; culmen 19, wing 66, tarsus 21. Figured. Collected on Jardine Creek, Cape York, North Queensland, on the 30th of April, 1911, and is the type of *T. c. jardinei*.



H. Grönvold del

Witherby & Co

HEMIPTILOTIS COCKERELLI.
(WHITE-STREAKED HONEY-EATER)

WHITE-STREAKED HONEY-EATER.

Adult female. Head brownish-black with a greyish tinge on the fore-head, an indistinct line of feathers above and behind the eye grey, lores blackish, an elongated tuft of golden-orange feathers below the ear; back of the neck, mantle, rump, upper tail-coverts and wing-coverts brownish-black; the lesser wing-coverts with white spots at the extremity; greater wing-coverts blackish-brown, faintly margined with dull yellow and tipped with yellowish-white; flight-feathers, secondaries and tail brownish-black, margined on the outer webs with dull greenish-olive; chin, throat, sides of the neck and fore-neck long and lanceolate, greyish-black at the base, white at the extremity; sides of the breast, sides of the body and flanks white with dusky streaks; remainder of the under-parts, including the under tail-coverts, silky-white; under-surface of wings smoky-black, widely margined on the inner web with rusty-buff; under aspect of tail smoky-black with whitish shafts. Eyes crimson, feet blue, bill black with bluish base. Total length 140 mm.; culmen 16, wing 66, tail 55, tarsus 19. Figured. Collected on Skull Creek, Cape York, North Queensland, on the 3rd of December, 1912.

The sexes are alike.

Adult male. Fore-part of the head, lores, and post-ocular region blackish; ear-coverts yellow; occiput, hind-neck, back, rump, upper tail-coverts, scapulars, and upper wing-coverts smoke-brown with blackish centres to many of the feathers; outer lesser upper wing-coverts blackish, some of greater series also blackish fringed with greenish-yellow and a few spots of white; bastard-wing, primary-coverts and flight-quills dark brown fringed with greenish-yellow on the outer webs, inner webs of the last margined with buff; tail-feathers dusky-brown slightly margined with greenish-yellow on some of the feathers; chin and throat pale yellow becoming brighter in colour on the fore-neck and cheeks where the feathers are attenuate, which imparts a streaked appearance; breast, abdomen, sides of body, and under tail-coverts cream-white with dark shaft-streaks to many of the feathers; thighs dusky; axillaries pale lemon-yellow; under wing-coverts and inner-margins of flight-quills below buff, remainder of quill-lining hair-brown; lower aspect of tail similar but somewhat paler. Eyes brown, feet slate, bill black. Total length 150 mm.; culmen 15, wing 74, tail 59, tarsus 20. Collected at Cape York, North Queensland, on the 23rd of July, 1898.

Immature female. General colour of the upper-surface smoke-brown, including the top of the head, hind-neck, back, upper tail-coverts, scapulars, and lesser upper wing-coverts, darker and inclining to blackish on the last; bastard-wing and greater coverts dark brown with pale edges; flight-quills also dark brown with greenish-yellow margins on the outer webs and buff on the inner ones; tail-feathers bronze-brown with yellowish edgings; base of fore-head, lores, and eye-region blackish, minutely speckled with white on the last; ear-coverts blackish-brown at the base and tipped with yellow; chin and throat greyish-white tinged with lemon-yellow, the latter colour becoming brighter on the fore-neck and sides of neck, where the feathers are attenuate and impart a streaked appearance; breast, abdomen, sides of body, and under tail-coverts greyish-white with dark spots or shaft-streaks to the feathers; thighs dusky; axillaries whitish; under wing-coverts and inner margins of flight-quills below cinnamon-rufous, remainder of quill-lining hair-brown; lower aspect of tail hair-brown. Eyes crimson, feet blue-grey, bill black with bluish base. Wing 63 mm. Collected at Cape York, North Queensland, on the 9th of December, 1912.

Juvenile female. General colour of the upper-surface dark ochreous-brown, including the top of the head, hind-neck, sides of neck, back, rump, upper tail-coverts, scapulars, and lesser upper wing-coverts; bastard-wing and primary-coverts dark brown slightly edged with greenish-yellow; flight-quills blackish-brown fringed

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on the outer webs with greenish-yellow and margined with buff on the inner ones; tail dark brown; sides of face unfeathered; chin and throat pale grey becoming darker on the breast and sides of breast; abdomen and under tail-coverts whitish tinged with sulphur-yellow; sides of body greyish; thighs rust-colour; marginal under wing-coverts yellow; under-surface of flight-quills dark brown with buff margins; lower aspect of tail pale brown. Eyes brown, bill dark brown, with lower mandible lighter, gape yellow, legs lead-colour. Collected on Jardine Creek, Cape York, North Queensland, on the 14th of May, 1911.

Eggs. Two eggs form the clutch. A clutch of two eggs taken at the Claudie River, Lloyds' Bay, North Queensland, on the 11th of January, 1914, is of a beautiful pale salmon ground-colour, mottled with cloudy markings of dull reddish-brown at the larger ends, where a well-defined cap is formed on each egg. Ovals in shape. Surface of shell smooth, fine, and slightly glossy. 19 by 14 mm.

Nest. Cup-shaped, and not a very substantial structure, composed of dried twigs and portions of creeping plants, etc., bound together with spiders' webs, and placed in a small tree. Dimensions over all, $2\frac{1}{2}$ inches across by $2\frac{1}{4}$ in depth.

Breeding-season. January to May.

WHEN Gould wrote: "It is but an act of justice that at least one of the birds of Australia should be named after Mr. James Cockerell, inasmuch as he is a native-born Australian, has collected very largely in the northern parts of that great country, and discovered more than one new species, amongst which must be enumerated the present very interesting bird," he did not anticipate the disrepute into which that collector should bring his name. As a collector Cockerell must be ranked very high, while as a preparateur he has scarcely, if ever, been surpassed, yet his foolish, almost criminal, trick of deliberately adding incorrect localities has made his name disliked in connection with Australian systematic ornithology.

Little has since been written save Maegillivray's notes, thus: "Mr. McLennan found this very beautiful Honey-eater to be fairly plentiful in the neighbourhood of the Jardine River, Cape York Peninsula, in March, April and May, 1911. In December they were in numbers in the black tea-tree country between Paira and Peak Point, but disappeared within a month. In their habits they closely resemble the members of the genus *Glyciphila* and their call is almost undistinguishable from that of *Stigmatops ocularis*. On the 24th April, 1911, one of these birds was found building its nest in the fork of a small tea-tree 2 feet from the ground at the edge of a swamp, the nest being composed of fine rootlets bound together with spiders' webs. The first clutch of eggs was found on the 9th of May, 1911, the nest being 2 feet from the ground in a small tea-tree. Four old nests were found in the vicinity, and one containing two half-fledged young birds, in similar bushes, all at about 2 feet from the ground. On the 10th May, 1911, another nest was found, again in a small tea-tree bush at about 18 inches from the ground.

WHITE-STREAKED HONEY-EATER.

An old nest was near by in another bush. On the 15th a nest was found containing two young birds, and another pair of young birds that had just left the nest was seen, and one obtained for a skin. In an adult male taken on the 12th March the soft parts were as follows: ♂, irides reddish-brown, bill black, naked skin at gape dark greenish-blue, legs dark slate. Stomach contents, honey and small insects. ♀, juvenile, irides brown, bill black, naked skin at gape pale greenish-blue, legs slate. Stomach contents, honey only (26th April, 1911). ♀, fledgling, taken on 15th May, 1911, irides brown; bill, upper mandible dark brown, lower light brown; gape yellow; legs lead-colour. Stomach contents, insects." Later from the Claudie River district Macgillivray added: "We first came across the Cockerell Honey-eater out towards the ranges from our top camp, in hilly country covered with stunted tea-tree. At the sandal-wood landing and between it and the tea-tree swamps, the country is sandy, covered with a low growth of tea-tree and other small shrubs under a larger growth of eucalypts and other forest trees. It was here that we found them nesting under ideal conditions. The eucalypts and some of the tea-tree were in flower, providing a plentiful supply of nectar and insects attracted to it, with the smaller forms of insect life abounding everywhere, especially after the advent of the wet season. The first nest containing an egg was found on 10th January by our cook, within a few yards of the camp. It was built in a small tea-tree 18 inches from the ground. On the 26th, 27th and 28th January we found a number of these nests containing eggs. Nearly all were placed in low bushes from 18 inches to 3 feet from the ground. One was picturesquely situated in a tangle of wild grape vine, which here grows freely in the open forest along the ground when it cannot find a tree to cling to. On the 27th the first nest containing young birds was found. The nest, usually firmly placed, is cup-shaped, and constructed of fine fibres and grasses. The eggs are invariably two. The young, when newly hatched, have the skin yellowish; feather tracts are bluish-black with a small amount of smoky-coloured down on the dorsal, humeral and femoral tracts; culmen blackish; gape and mouth pale yellow; legs pale slaty; eyes not open. The note of the adult is a clear sharp whistle much like that of the *Glyciphila*. This species was uncommon on the Archer River."

GENUS—LOPHOPTILOTIS.

LOPHOPTILOTIS Mathews, Nov. Zool., Vol.

XVIII., p. 414, Jan. 31st, 1912. Type

(by monotypy) *Ptilotis leadbeteri* McCoy
= *P. cassidix* Gould.

THIS is one of the most distinct generic groups in the family, and when McCoy described the type species he wrote: "The subcristate head and the female differing in colour from the male suggest a new subgeneric section for this fine bird."

The species are large "*Ptilotis*" with peculiar subcrested heads, elongate ear-coverts, short stout bills, long wings, long wedge-shaped tail and short strong legs and feet.

The bill is short and stout, shorter than the length of the head, laterally compressed with slight basal expansion, so that breadth at base is less than depth; culmen arched, no projecting tip; under mandible strong; interramal space feathered, less than half the length of the mandible; gonys notably straight; nasal groove long, less than half the length of the bill; frontal feathers approaching on to the groove for half its length; linear nostrils strongly operculate.

The wing is long, the first primary short, half the length of the second, which exceeds the long secondaries but is shorter than the seventh primary; the third, fourth, fifth and sixth primaries subequal and longest.

The tail is long, and notably fan-shaped, the feathers fairly broad but tips pointed.

The legs are short and stout; the front is strongly scutellate, seven scutes being counted, the hinder aspect bilaminate; the toes are strong, the hind-toe stoutest and longest, the outer and inner toes subequal, the inner toe with claw longer than the middle toe alone.

The species, known as *Ptilotis auricomis*, recte *melanops*, seems congeneric, differing only in slightly smaller size and subcrest not pronounced.

Key to the Species.

Upper-surface dark olive, feathers on fore-head full, larger *L. cassidix*.

Upper-surface dull olive, feathers on fore-head normal,

smaller *L. melanops*.



H Grönvold, del

Witherby & Co

LOPHOPTILOTTIS MELANOPS
YELLOW-TUFTED HONEY-EATER.

LOPHOPTILOTTIS CASSIDIX
(HELMETED HONEY-EATER.)

Order PASSERIFORMES.

Family MELITHREPTIDÆ.

No. 675.

LOPHOPTILOTTIS CASSIDIX.

HELMETED HONEY-EATER.

(PLATE 536.)

PTILOTTIS CASSIDIX Gould, Birds Austr. Suppl., pt. iv., pl. 39, (before ?) Dec. 1st, 1867 : Western Port, Victoria.

Ptilotis cassidix Jardine, Proc. Zool. Soc. (Lond.), 1866, p. 558, n.n. ; Gould, Birds Austr. Suppl., pt. iv., pl. 39, before (?) Dec. 1st, 1867 : (Western Port ?) Victoria ; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 189, 1878 ; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 243, 1884 ; Ramsay, Tab. List Austr. Birds, p. 13, 1888 ; Hall, Key Birds Austr., p. 42, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I. p. 400, 1901 ; North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 142, 1907 ; Mathews, Handl. Birds Austral., p. 96, 1908 ; F. E. Wilson, Emu, Vol. IX., p. 168, 1910 ; Wilson and Chandler, *ib.*, Vol. X., p. 37, 1910 ; Wilson, *ib.*, Vol. XI., p. 252, 1912 ; Stone, *ib.*, Vol. XVI., p. 105, 1916.

Ptilotis leadbeateri McCoy, Ann. Mag. Nat. Hist., Ser. III., Vol. XX., pt. II., p. 442, Dec. 1st, 1867 : Western Port, Victoria ; Mathews, Nov. Zool., Vol. XVIII., p. 408, 1912.

Lophoptilotis leadbeateri Mathews, List Birds Austr., p. 277, 1913.

DISTRIBUTION. Victoria only.

Adult female. Top of the head golden-yellow, with blackish bases to the feathers ; back of the neck, mantle, rump and wing-coverts dark olive ; upper tail-coverts lighter olive ; primaries and secondaries ash-brown, margined on the outer web with yellowish-green ; middle tail-feathers ash-brown, margined on the outer web with greenish-yellow, remainder of tail ash-brown with a large yellowish-white spot at the tip of each feather ; lores, feathers surrounding the eye glossy black, sides of the head with a patch of glossy black feathers ; an elongated tuft of golden-yellow feathers behind the ear ; feathers of the throat golden-yellow, with white bases, divided down the middle by a line of black feathers tipped with golden-yellow ; chest golden-yellow becoming paler over the belly, sides and under tail-coverts ; under-surface of tail dark olive, each feather except the middle pair broadly tipped on their inner webs with pale yellow ; under wing-coverts and axillaries yellow, slightly peppered with black ; under-surface of wings greyish-brown, margined on the inner web with yellowish-buff, and with greenish-olive on the outer web. Bill and feet black. Total length 198 mm. ; culmen 13, wing 94, tail 101, tarsus 25. Figured. Collected in Victoria.

Adult male similar to the above.

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Nest. Cup-shaped, suspended from twigs by the rims. Composed of grass and on the outside pieces of bark joined on with cocoons. Lined with soft bark. Outside measurements, $2\frac{1}{2}$ inches deep by 4 wide. Inside, $1\frac{1}{4}$ by $2\frac{1}{2}$ inches wide. (This nest contained two eggs of the Honey-eater and one of *C. basalis*.)

Eggs. Two eggs usually form the clutch. A pair taken at Cardinia Creek, Beaconsfield, Victoria, on the 11th of December, 1909, is of a pale flesh-tint, marked, particularly at the larger end, with rounded spots of reddish-brown and purplish-grey. Rounded ovals in shape. Surface of shell fine and slightly glossy. 20-22 by 16 mm.

Nest. A deep cup-shaped structure, composed chiefly of strips of bark and leaves, etc., lined with soft material, and suspended from the branch of a small tree or bush. Dimensions over all, 4 to $4\frac{1}{2}$ inches by $3\frac{1}{2}$ to 4 inches in depth.

Breeding-months. August to December.

SIR William Jardine recognised this bird as new in a collection of birds he had secured in Edinburgh, which came from Australia, and called it *Ptilotis cassidix*. He sent it to Gould who agreed with its novelty, and it was exhibited at a meeting of the Zoological Society of London under Jardine's name. Gould then had it figured and made a description of this specimen, but the publication was delayed for a year. In the meanwhile another specimen turned up in Edinburgh, and Gould received specimens from Western Port Bay, Victoria. No description was ever offered by Jardine, so that when McCoy received specimens he described them as new, and naming it *Ptilotis leadbeateri* his description was issued in the *Annals and Magazine of Natural History* which appeared on Dec. 1st, 1867. Gould's plate was issued in the part for Dec. 1867 which came out the same day, and, as his description was accompanied by a figure, it takes precedence. It should be noted that McCoy drew attention to the crest as suggesting subgeneric separation.

Little was known about the habits of this bird until Messrs. F. E. Wilson and L. G. Chandler made an intensive study and sent me their notes for this work. As publication would be a long time ahead they also published the results in the *Emu* as shown in my synonymy. As this constitutes practically all that has been published, I here transcribe their original notes regarding the habits and habitat. They wrote: "The habitat of this bird is confined to the eastern portion of Victoria and possibly may be found to extend into the south-west corner of New South Wales, and, although considered a very rare bird, explorations in the mountainous districts in the vicinity of the Australian Alps might show it to be more numerous. Our notes have been obtained in the Beaconsfield district only, thirty miles east of Melbourne, where the numerous little creeks form their homes. It has a variety of notes, two of which are monosyllabic, but unfortunately some of them are extremely hard to write down on paper. After using the monosyllabic notes, they give

HELMETED HONEY-EATER.

the head a peculiar little jerk upwards and raise the tail slightly. One of the notes, generally uttered when flying from tree to tree, much resembles the note of the White-naped Honey-eater. Another may be translated as 'Churl, Churl, Churl, Churl,' while the nesting note which is the most beautiful of all, and which is usually uttered when the bird is sitting at the side of the nest, may be rendered thus: 'Jor, Jor, Jor, Jor, Jor, Jiree, Jiree, Jiree, Jiree,' the 'Jiree' portion being a semitone higher than the rest. During the nesting season they are extremely savage and vigorously attack anything and everything in the feathered line that comes their way, and indeed frequently go considerably *out* of their way to give battle to an often unsuspecting enemy. One of the prettiest sights we have seen was a case in which a flock of Sittellas (*Neositta chrysoptera*) happened to approach the outskirts of a 'Cassidix' domain. The Honey-eater, spying the Sittellas, speedily set out to meet them, and his onslaught was so severe that they were all forced to take wing, when in sheep-dog fashion he rounded the stragglers into the centre of the flock and kept them well bunched together until he had driven them from the locality. Harmonious Shrike Thrushes, White-shouldered Caterpillar Catchers, Coachwhip Birds, and indeed all birds which incur his displeasure, find it wise to keep at a distance, as his swiftness of flight and boldness make him an enemy to be feared. These birds are fond of the company of their own kind, and will never be found in parties of less than two or three pairs in each locality, and these will usually nest in an area of a few hundred square yards. Frequently you will see five or six birds, flying in single file from one tree top to another, and it is a lovely sight to watch them as they flash in and out of the leafy branches, chasing one another and performing all manner of evolutions. In the winter months they seem to leave their summer quarters and repair to the big timber, but always return to exactly the same spot as the breeding season approaches. During the breeding season they subsist almost entirely on an insectivorous diet, and indeed we have only on one occasion and that in the depth of winter seen them partaking of nectar. In their search for insects they obtain them from three sources: firstly from the green gum-leaves, secondly by diligently searching the loose bark and tree trunks, and thirdly by taking them on the wing. In the act of taking insects while flying they have no superiors, hovering, stopping and turning in a manner that would make most of the Flycatchers appear to be novices. Beetles, flies, caterpillars, small spiders, etc., all are taken and occasionally small moths.

"The favourite nesting site is a low bush growing out of the bark of a creek, and the task of building is carried on after sundown and in the early morning.

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“The young one day old, were born blind and naked, the flesh being a peculiar shade of orange-pink; gape creamy-yellow. Little white spots marked the places where the wing and tail quills would shortly make their appearance. Six days old: gape creamy-yellow, irides pale brown; the quills on the top of the head not yet broken; a line of feathers down the centre of the back was of a dusky greyish colour. The thighs were sparsely covered at the base with a few long unbroken quills, while others just broken formed a dusky greyish patch at rear of shoulders. The tail quills were short and just breaking, the upper ones being black and the lower ones yellow. The primaries and secondaries, which were contained in long bluish quills, were protruding about a quarter of an inch and were of a dusky greyish colour with faint olive edgings. Lines of feathers starting from a patch on the throat and continuing down each side of the chest and abdomen were of a rich sulphur-yellow colour; each side of the rump was decorated with a small patch of yellowish feathers; the legs and feet were bluish-grey.”

Order PASSIERFORMES.

Family MELITHREPTIDÆ.

No. 676.

LOPHOPTILOTI MELANOPS.

YELLOW-TUFTED HONEY-EATER.

(PLATE 536.)

Turdus melanops Latham, Index Ornith. Suppl., p. XL., (after May) 1801: New South Wales.

Turdus melanops Latham, Index Ornith. Suppl., p. XL., 1801.

Muscicapa auricomis Latham, *ib.*, p. XLIX., (after May) 1801: New South Wales.

Muscicapa mystacea Latham, *ib.*, p. LI.: New South Wales.

Black-eyed Thrush Latham, Gen. Synops. Birds, Suppl. II., p. 181, 1801.

Yellow-tufted Flycatcher Latham, *ib.*, p. 215.

Mustachoe Flycatcher Latham, *ib.*, p. 221.

Certhia chrysotos Bechstein, Kurze Uebers. Vögel, p. 197, 1811: New South Wales.

Certhia auriculata Shaw, Gen. Zool., Vol. VIII., pt. I., p. 236, 1812: New South Wales.

Philemon erythrotis Vieillot, Nouv. Dict. d'Hist. Nat., nouv. ed., Vol. XXVII., p. 429, Dec. 26th, 1818: Botany Bay, New South Wales.

Melliphaga auricomis Swainson, Zool. Illus., 1st Ser., Vol. I., pl. 43, 1821; Vigors and Horsfield, Trans. Linn. Soc. (Lond.), Vol. XV., p. 313, 1827.

Muscicapa australis "Latham MS." Strickland, Ann. Mag. Nat. Hist., Vol. XI., p. 336, May 1843: as synonym of *M. auricomis* Latham.

Muscicapa novæhollandiæ "Latham MS.," *id.*, *ib.*, as synonym of *M. auricomis* Latham (not *Muscicapa novæhollandiæ* Latham, Index Ornith., p. 478, 1790).

Ptilotis melanops Gray, Annals Mag. Nat. Hist., Vol. XI., p. 192, 1843; Sharpe, Hist. Coll. Nat. Hist. Brit. Mus., Vol. II., p. 131, 1907; Mathews, Handl. Birds Austral., p. 96, 1908; Cleland, Emu, Vol. IX., p. 225, 1910 (Food); *id.*, *ib.*, Vol. XI., p. 91, 1911 (Food); Hays, *ib.*, Vol. XX., p. 34, 1920 (N.S.W.).

Ptilotis auricomis Gould, Birds Austr., pt. xvii. (Vol. IV., pl. 37), Dec. 1st, 1844; Ramsay, Ibis, p. 243, 1864; Gould, Handb. Birds Austr., Vol. I., p. 511, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 189, 1878; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 242, 1884; Ramsay, Tab. List Austr. Birds, p. 12, 1888; Hall, Key Birds Austr., p. 42, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 398, 1901; A. G. Campbell, Emu, Vol. II., p. 14, 1902 (Vic.); Hill, *ib.*, Vol. VII., p. 18, 1907 (Vic.); North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 139, 1907; Howe, Emu, Vol. VIII.,

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p. 131, 1909 (Vic.) ; Darnell Smith, *ib.*, Vol. X., p. 52, pl. vi., 1910 (N.S.W.) ;
Le Souëf and Macpherson, *ib.*, Vol. XX., p. 90, 1920 (N.S.W.).

Ptilotis melanops melanops Mathews, Nov. Zool., Vol. XVIII., p. 408, Jan. 31st, 1912.

Ptilotis melanops meltoni Mathews, *ib.* : (Melton) Victoria ; *id.*, Austral Av. Rec., Vol. I.,
p. 62, 1912.

Lophoptilotis melanops melanops Mathews, List Birds Austr., p. 277, 1913.

Lophoptilotis melanops meltoni Mathews, *ib.* ; Belcher, Birds Geelong, p. 342, 1914.

DISTRIBUTION. Queensland, New South Wales, Victoria.

Adult. Top of the head greenish-yellow with dark grey bases to the feathers ; back of the neck, mantle, wing-coverts and secondaries dull olive, becoming paler on the rump ; primaries ash-brown, margined on the outer web with yellowish-green, and on the basal part of the inner web with yellowish-buff ; tail-feathers dull olive, margined on the outer web with yellowish-green, tipped with whitish-yellow ; feathers in front of, and above and below the eye, as well as the ear-coverts, glossy-black ; ear-tufts composed of long golden-yellow feathers ; throat golden-yellow divided down the middle by blackish-brown feathers, tipped with golden-yellow ; chest, sides of the body and flanks dusky-yellow, becoming creamy-yellow on the middle of the belly and under tail-coverts ; axillaries and under wing-coverts golden-yellow ; under-surface of wings olive-brown, widely margined on the inner webs with yellowish-buff ; under-surface of tail dull golden-olive, margined at the extremity with yellowish-buff. Eyes maroon. Bill and feet black. Total length 172 mm. ; culmen 10, wing 83, tail 81, tarsus 23. Figured. Collected at Melton, Victoria, on the 8th of June, 1908, and is the type of *L. m. meltoni*.

The sexes are alike.

" *Fledglings* are brown above with only a slight tinge of olive, the wings and tail duller in colour than the adult, the fore-head and occiput being slightly washed with olive-yellow ; lores, side of head and ear-coverts blackish ; lengthened plumes behind the ears and feathers on sides of throat very pale olive-yellow ; all the under-surface olive-brown, the centre of the breast and abdomen dull olive-yellow ; bill and gape yellow ; tip of bill and a line extending below the nostrils brown ; legs flesh-colour ; iris blackish-brown. Collected at Roseville on the 12th of October, 1901." (North.)

Eggs. Two to three eggs form the clutch, usually two. A clutch of two eggs taken at Chatswood, near Sydney, on the 22nd of August, 1915, is of a beautiful pinkish-buff ground-colour, well spotted with dark reddish-brown and purplish-grey. Swollen ovals in shape. Surface of shell fine and smooth, and rather glossy. 21-22 by 16 mm.

Nest. A neat cup-shaped structure composed of strips of bark and grasses, and frequently decorated all over the outside and bound together with cobwebs and spiders' white egg-bags. Lined with hair or soft downy vegetable substance. Measurements over all, 3¼ inches by 2½ inches in depth. Usually placed near the ground in a small bush, sometimes within two feet of the ground.

Breeding-months. (June) July to December.

THIS beautiful species was named from the Lambert drawings more than once, and apparently though it was a common bird its bright colouring attracted attention. Watling in the note hereafter quoted states it was a

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very common bird. Thus Vigors and Horsfield have recorded that Mr. Caley first observed this species in some high trees in the neighbourhood of Paramatta; but he did not meet with it for many years afterwards. The birds, however, frequented the trees in the brush along the upper part of Duck River in great abundance, although it was at a late period of his residence in the colony that he met with them at that place. He imagines that their coming to Paramatta when he first saw them was accidental."

Gould wrote: "The Yellow-tufted Honey-eater is abundant in New South Wales, inhabiting at one season or other every portion of the country; the brushes near the coast, the flowering trees of the plains, and those of the sides and crowns of the hills towards the interior being alike tenanted by it. It is an active, animated species, flitting with a darting flight from tree to tree, and threading the most thickly-leaved branches with a variety of sprightly actions."

One of E. P. Ramsay's earliest contributions stated: "Is perhaps one of the most beautiful birds of New South Wales; nor are its eggs less beautiful than the bird itself. It evinces a preference for the more open underwood of young *Eucalyptus* and Wattle-trees (*Acacia decurrens*) which are plentiful near Dobroyde, Enfield, and Parramatta, rather than for the dense scrubland near the coast. I have met with it as far as Manar, between Braidwood and Goulburn. Like most of its tribe it is very partial to fruit, and during the latter end of February, and throughout the month of March, the pear trees swarm with this and many other species. During the orange season also they visit us in great numbers, and many may be seen fighting over the half-decayed fruit with which the ground at that time is literally strewed. Remains with us throughout the whole year, and breeds earlier than the generality of Honey-eaters. Eggs have been taken early in June and as late as the end of October, during which month they sometimes have a third brood; but August and September appear to be their principal breeding months."

Mr. A. G. Campbell has written me: "This species in Victoria is restricted solely to the gold-bearing Silurian ridges that occur throughout the central parts of the State from Stawell in the west to about Chiltern in the east. Many instances are known of plants being restricted to given areas, but with birds it is rare. This bird, however, is not found in the mountainous parts, but prefers the more open gold-bearing country."

Mr. L. G. Chandler wrote me: "At the Yon Yongs on Aug. 31, 1908, I noticed seven or eight of these birds on the ground, pulling and dragging at an old nest of *Acanthiza pusilla*. Whether they were in search of insects or at play I could not determine, but believe they were at play. It is singular

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that this species is not found around Frankston, for the country appears quite suitable for them. At Melton and Parwon, points further north, they are plentiful."

Writing about the birds of Ararat, Victoria, G. F. Hill stated: "I am unable to say if these Honey-eaters arrive in pairs or in flocks, but I believe it is in pairs. Nesting commences in July, and continues through August, September, and October."

F. E. Howe has written: "The young of this bird are born blind and featherless; the gape is yellow, as is also the inside of the mouth, with the exception of two black spots on the lower mandible; the legs and feet are of a light flesh-colour. At about three days old a dark grey down appears, and the eyes are beginning to open. At about seven days old the yellow feathers of the abdomen are well defined, and the primaries in long blue quills. Young that appeared to be very little older had the primaries unfurling, and we calculated that they would leave the nest when about 15 or 16 days old. The irides of the adult are dark maroon, but in the nestling they were dark brown. I took one very beautiful pair of eggs, and whilst at the nest two birds appeared, and seemed greatly agitated at my presence. They were secured, and to my surprise both proved to be females; and it was strange that of all the Honey-eaters we got on the trip not one was a male."

An interesting note and photograph of Darnell Smith appeared in the *Emu*, Vol. X., which I quote: "On 19th December, Dr. J. Burton Cleland and myself observed a number of birds feeding upon 'manna' which was exuding from a large wound in a grey gum (*Eucalyptus punctata*) at Milson Island, Hawkesbury River. Among them my colleague identified *Ptilotis auricomis* (Yellow-tufted Honey-eater), *P. chrysops* (Yellow-faced Honey-eater), *P. leucotis* (White-eared Honey-eater), *Melithreptus lunulatus* (White-naped Honey-eater), *M. brevirostris* (Brown-headed Honey-eater) and *Meliphaga phrygia* (Warty-faced Honey-eater). The birds flew down from the uppermost branches of the neighbouring trees, and, clinging to the large trunk of the grey gum, licked the yellowish exudation with the greatest relish. So eager were they that, as we stood near the tree, numbers of them, while looking for a foothold upon the tree trunk, fluttered round our heads. A photograph of the birds clinging to the tree was taken, but they did not show up well against the dark background. A small branch was therefore thrust into a portion of the wound in the tree, and a very good photograph of seven specimens of *Ptilotis auricomis*, in various positions, was obtained. The exudation from the tree had a very sweet taste, and such exudations are apparently used as a supplementary food by Honey-eaters when they have

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located a tree where a supply is to be obtained. The 'manna' from the grey gum has been proved by Mr. H. G. Smith, F.C.S., of the Sydney Technological Museum, to contain as its principal constituent the sugar known as raffinose or melitose."

Hays from Bundarra, New South Wales, wrote in 1919: "As early as 30th August this year I found the Yellow-tufted Honey-eater (*Ptilotis melanops*) nesting, and as these birds are not very common in this district, I became interested in them and watched their nesting operations. I am convinced that all birds group for nesting more or less, and these were a very decided instance, as I found fifteen nests within a circumference of one mile, and outside of that group you could not find a single nest or hear the familiar 'Cheop, cheop,' of a single bird. Of the fifteen nests found, two only hatched out. One of these was destroyed by a fox when the young birds were nearly able to fly; the other nest was built on the side of a tree, about six feet from the ground, and the young survived. Two others laid two eggs each, sat on them for a while, and then deserted them. Of the other eleven nests completed, all were deserted without having eggs laid in them, and as this is the 30th October, and all the birds have departed, the nests are still empty, so it looks as if the increase in this particular species will be *nil*, unless rain induces them to start nesting operations all over again in some other locality. It would appear certain that the drought was the indirect cause, and the lack of blossoms, natural food, and water, caused by the long continued dry spell the direct cause. Only one nest was built higher than four feet from the ground, one was almost on the ground, the others all about two feet high, in small iron-bark bushes in most cases, one case on the side of a tree, one in the dead leaves of a fallen tree, and several in a low heath bush."

Le Souëf and Macpherson's notes from Sydney, New South Wales, are of interest, as this is the original locality whence this bird was described one hundred and twenty years previously. "The Yellow-tuft, or, as it is often called, the 'Whiskey' is common in some of the outlying suburbs, where they sometimes attack soft fruits in the summer, though they feed largely on insects for the most part of the year. One will at times see a single Yellow-tuft fly into a tree and start calling, and as many as twenty or thirty of the same species will flock round him and sit with expanded wings or flit about uttering a short note, evidently holding a sort of council meeting—a phase of action noted in many species of this family."

The technical history of this species is involved though really not complex. Gould called the bird *Ptilotis auricomis*, probably following Swainson who first figured it under the name *Melliphaga auricomis*, basing the name on *Muscicapa auricomis* of Latham.

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When Gray examined the Lambert drawings he recognised the painting of *Turdus melanops* Latham as applicable and wrote :

“ <i>Turdus melanops</i> Lath. Vieill.	“ <i>Ptilotis melanops</i> .
= <i>Meliphaga melanops</i> Temm.	(Name proposed.)”
<i>Muscicapa mystacea</i> Lath.	
<i>Certhia auriculata</i> Shaw.	
<i>Philemon erythrotis</i> Vieill.	
<i>Meliphaga auricomis</i> V. & H.	
nec <i>Muscicapa auricomis</i> Lath.	

This was, however, not accepted by Gould, who moreover gave no reason, not even noting the first name in his synonymy of his *Ptilotis auricomis*, but instead including *Muscicapa novæhollandiæ* which had priority. The name *Muscicapa novæhollandiæ* will be discussed later, but here it may be stated that it was given to a bird figured in White's Journal which is certainly not this species. Consequent upon Gould's usage of *auricomis* that specific name was continued without question until Sharpe examined the Watling drawings, when, ignorant of Gray's record of the Lambert drawings as above quoted, he wrote (*Hist. Coll. Nat. Hist. Brit. Mus.*, Vol. II., p. 130, 1906) :

“ No. 121. Black-eyed Thrush Lath., Gen. Syn., Suppl. II., p. 181.

Turdus melanops Lath., Ind. Orn. Suppl., p. XL.

Ptilotis auricomis (Lath.) Gadow, Cat. B., IX., p. 242.

“ Watling's note : ‘ Natural size. The native name of this very common bird in New South Wales is *Dar-wang*. It is a very lively bird, and by us called the *Yellow-eared Flycatcher*. The tongue is feathered at the tip for sucking honey, which it is very fond of. It builds its nest on the pensile branch of some trees or low shrubs, as, I suppose, to avoid the opossum, flying squirrel, lizards, guana, and birds and mice. The yellow at ears are tufts of feathers longer than those on the other part of the head.’

“ No. 122. Black-eyed Thrush.

“ This figure is the type of the ‘ Yellow-tufted Flycatcher ’ of Latham (Gen. Syn. Suppl. II., p. 215 = *Muscicapa auricomis* Lath. Ind. Orn. Suppl., p. XLIX.). The species, therefore, must bear the name of *Ptilotis melanops* (*vide supra* No. 121).

“ Watling's note : ‘ Half the natural size. Native name *Dar-wang*.’

“ No. 133. Mustachœ Flycatcher Latham, Gen. Syn. Suppl. II., p. 221.

Muscicapa mystacea Lath., Ind. Orn. Suppl., p. LI.

Ptilotis auricomis Gadow, Cat. B., IX., p. 242 (*vide supra* No. 121).

“ Watling gives the following note : ‘ Two-thirds the natural size. This bird is often seen contending with small Parroquets.’ ”

YELLOW-TUFTED HONEY-EATER.

It will be at once noticed there is some confusion in connection with the names and notes by Latham. Thus, in connection with his Black-eyed Thrush, which comes first in his book, Latham gives no field-notes nor any indication of where he saw the bird or picture. Then he uses the name Yellow-eared Flycatcher for the bird figured in White's Voyage, and introduces another species, the Yellow-tufted Flycatcher, and thereto adds and elaborates the long note quoted above by Sharpe ex Watling in connection with the Black-eyed Thrush. Latham also quoted, and added to, Watling's note with regard to his Mustachœ Flycatcher, which is the same bird. The restricted range of this species, ranging only from central New South Wales into Victoria, did not suggest much differentiation into subspecies, but I noted that the Victorian form differed from the typical one in its generally paler coloration and smaller size and named it *P. melanops meltoni*, and this was upheld in my 1913 "List" under the genus name *Lophoptilotis*.

GENUS—LICHENOSTOMUS.

LICHENOSTOMUS Cabanis, Mus. Hein.,

Vol. I., p. 119, (after Oct. 23rd)

1851. Type (by monotypy) .. *Lichenostomus occidentalis* Cabanis.

CABANIS separated this genus on account of the facial wattle, which is peculiar in this series.

Medium "*Ptilotis*" with medium bills, long wing, long square tail and longish slender legs and small feet.

The bill is slightly shorter than the head, compressed laterally with little expansion at the base; culmen arched and semikeeled, tip a little depressed; under mandible nearly straight; interramal space nearly half the length of the mandible; nasal groove long, and linear nostril pervious and strongly operculate.

The wing is long with the third, fourth, fifth and sixth primaries longest and subequal, the seventh a little shorter; the second primary equal to the eighth and only a little longer than the secondaries; the first primary short, but more than half the length of the second and less than half the length of the third.

The tail is long and square.

The legs are comparatively long and slender, the front of the tarsus scutellate, the hind portion bilaminar; the feet are small, the anterior toes delicate, and the hind-toe a little stouter and just exceeding the middle toe in length; the inner and outer toes subequal, and with claw longer than the middle toe alone; claws sharp.



H. Grönvold del

Witherby & Co

LICHENOSTOMUS CRATITIUS
(WATTLED-CHEEKED HONEY-EATER.)

Order PASSERIFORMES.

No. 677.

Family MELITHREPTIDÆ.

LICHENOSTOMUS CRATTIUS.

WATTLE-CHEEKED HONEY-EATER.

(PLATE 537.)

PTILOIS CRATTIUS Gould, Proc. Zool. Soc. (Lond.), 1840, p. 160, July 1841: Interior South Australia.

Ptilotis cratitius Gould, Proc. Zool. Soc. (Lond.), 1840, p. 160, 1841; *id.*, Birds Austr., pt. xvi. (Vol. IV., pl. 38), Sept. 1st, 1844; *id.*, Handb. Birds Austr., Vol. II., p. 513, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 189, 1878; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 243, 1884; Ramsay, Tab. List Austr. Birds, p. 12, 1888; Hall, Key Birds Austr., p. 42, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 401, 1901; Milligan, Emu, Vol. III., pp. 11-18, 1903 (W.A.); *id.*, *ib.*, Vol. IV., pp. 6-10, 1904 (W.A.); A. G. Campbell, *ib.*, Vol. V., p. 143, 1906 (Kangaroo Island); North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 147, 1907; Mathews, Handl. Birds Austral., p. 96, 1908; Howe, Emu, Vol. VIII., pp. 132, 5, 7, 1909 (Vic.); *id.*, *ib.*, Vol. IX., p. 233, 1910 (Vic.); Whitlock, *ib.*, Vol. X., p. 311, 1911 (W.A.); *id.*, *ib.*, Vol. XI., pp. 240-2, 1912 (W.A.); Cleland, *ib.*, Vol. XII., p. 16, 1912 (Food); S. A. White, *ib.*, p. 180, 1913 (S.A.); *id.*, *ib.*, p. 270 (Kangaroo Island); Chandler, *ib.*, Vol. XIII., p. 43, 1913 (Vic.).

Meliphaga cratitia Gray, Genera Birds, Vol. I., p. 122, 1846.

Lichenostomus cratitius Cabanis, Mus. Hein., Vol. I., p. 119, note, 1851.

Lichenostomus occidentalis Cabanis, Mus. Hein., Vol. I., p. 119, note, (after Oct. 23rd) 1851: West Australia, *i.e.*, Wongan Hills.

Ptilotis occidentalis Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 189, 1878; *id.*, Tab. List Austr. Birds, p. 12, 1888; Mathews, Handl. Birds Austral., p. 96, 1908.

Ptilotis cratitia cratitia Mathews, Nov. Zool., Vol. XVIII., p. 408, Jan. 31st, 1912.

Ptilotis cratitia halmaturina Mathews, *ib.*, p. 409: Kangaroo Island.

Ptilotis cratitia howei Mathews, *ib.*: Kow Plains, Victoria.

Ptilotis cratitia stirlingi Mathews, *ib.*: Stirling Ranges, West Australia.

Ptilotis cratitia occidentalis Mathews, *ib.*

Ptilotis carpentariensis Campbell, Emu, Vol. XII., pt. i., p. 19, July 1st, 1912 (ex Bull. Roy. Austr. Orn. Union, No. 3, May 21st, 1912, unpublished): Burketown, Gulf of Carpentaria.

Ptilotis cratitia samueli Mathews, Austral Avian Record, Vol. I., pt. 4, p. 99, Sept. 18th, 1912: Eyre's Peninsula, South Australia.

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Ptilotis cratitia zarda Mathews, *ib.*, pt. 8, p. 193, March 20th, 1913: new name for preceding, not *P. chrysops samueli*, *id.*, *ib.*

Lichenostomus cratitius cratitius Mathews, List Birds Austr., p. 278, 1913.

Lichenostomus cratitius zarda Mathews, *ib.*

Lichenostomus cratitius howei Mathews, *ib.*

Lichenostomus cratitius carpentariensis Mathews, *ib.*

Lichenostomus cratitius stirlingi Mathews, *ib.*

Lichenostomus cratitius occidentalis Mathews, *ib.*

DISTRIBUTION. Southern Australia from the Kow Plains, Victoria, through South Australia and Kangaroo Island to Albany, South-west Australia. [Gulf of Carpentaria ?] (Never in forest country ?)

Adult male. Head dark grey, back of the neck grey, gradually merging into the greenish-olive colour of the back; mantle, rump, upper wing-coverts, upper tail-coverts and tail, outer margins of the wings and tail yellowish-green; feathers in front of and behind the eye brownish-black; cheeks silvery-grey, an elongated tuft of feathers below the ear-coverts golden-yellow; chin and throat dusky-yellow with lighter tips of yellow, producing a rather streaked appearance; chest, breast and flanks greyish-yellow, becoming creamy-yellow on the middle of the abdomen and under tail-coverts; under-surface of wings ash-brown, broadly margined on the inner web with rich yellowish-buff. Eyes deep brown, feet dark lead-grey, bill black. The narrow lilac wattle extends to the ear-coverts. Total length 170 mm.; culmen 13, wing 84, tail 82, tarsus 24. Figured. Collected in the Stirling Ranges, West Australia, on the 28th of September, 1910, and is the type of *P. c. stirlingi*. (Mid. fig.)

Adult male. Top of the head dark grey, back of the neck, mantle, lower back, rump, upper tail-coverts, wing-coverts and secondaries dark olive; flight-feathers ashy-brown, margined on the outer web with yellowish-green; tail-feathers greenish-olive, margined on the outer webs with yellowish-green; feathers in front of the eye black; a line of blackish feathers from the eye to the sides of the neck; a small elongated tuft of golden-yellow feathers below the ear; chin and throat dusky-yellow with light grey bases to the feathers; a well-marked malar-stripe composed of golden-yellow feathers; chest, breast and flanks greyish-yellow, lightest on the abdomen and under tail-coverts; under-surface of quills ash-brown, margined on the inner web with buff. Bill, feet and eyes black. Total length 160 mm.; culmen 13, wing 80, tail 74, tarsus 23. Figured. Collected on Kow Plains, Victoria, on the 11th of October, 1909, and is the type of *P. c. howei*. (Top fig.)

Adult male. Lores, top of the head and back of the neck dark grey, each feather with a mesial-streak of faint blackish-brown along the shaft; mantle, back, rump, wing-coverts and scapulars greenish-olive; flight-feathers ash-brown, widely margined on the outer web with yellowish-green; tail-feathers greenish-olive, fringed on the outer web with yellowish-green; feathers in front of the eye black, those surrounding the eye and continued on to the ear-coverts blackish-grey; a tuft of feathers below the ear golden-yellow; feathers of the chin, throat and breast grey at the base and tipped with yellow; malar-streak golden-yellow, remainder of the under-surface olive-yellow; under-surface of the primary-quills ash-brown, margined along the base of the inner web with rich buff; under aspect of tail yellowish-olive, slightly paler at the tip. Total length 190 mm.; culmen 13, wing 88, tail 82, tarsus 28. Figured. Collected on Kangaroo Island, South Australia, on the 25th of March, 1905. (Bottom fig.)

WATTLE-CHEEKED HONEY-EATER.

Adult female similar to the adult male.

Young female. General colour of the upper-surface olive, tinged with grey on the top of the head and slightly tinged with tawny on the back and upper tail-coverts; outer webs of flight-quills greenish-yellow, the inner ones dark brown margined with buff; tail pale brown tinged with greenish-yellow on the outer webs; lores blackish; ear-coverts dark brown; a pale yellow moustacial-streak which extends on to the sides of the neck; under-surface yellow including the chin, throat, and breast, becoming brighter yellow on the abdomen, vent, and under tail-coverts; under wing-coverts pale buff; under-surface of flight-quills hair-brown margined with buff; lower aspect of tail pale yellowish-brown with white shafts. Bill black, wattle at gape yellow; eyes dark brown, feet and legs light brown. Collected on the Wongan Hill, West Australia, on the 3rd of October, 1903.

Eggs. Two eggs usually form the clutch. A clutch of two taken at Kow Plains, North-west Victoria, on the 30th of September, 1912, is of a very pale pinkish-white, spotted and blotched with pale to dark reddish-brown, and forming a broken and irregular cap of markings at the larger ends, where they become confluent. Swollen ovals in shape. Surface of shell smooth and rather glossy. 21 by 15 mm.

Nest. A cup-shaped structure, composed chiefly of thin strips of bark, and lined inside with grass, etc.; usually suspended from the branch of a bush or small tree, and often within less than five feet of the ground.

Breeding-months. August to December.

GOULD's observations on this species which he discovered and described read: "I first met with this new species of Honey-eater on the 26th of June, 1839, on the ranges near the Upper Torrens in South Australia; it appeared to be a most pugnacious bird, driving every other species from the tree upon which it was feeding. I afterwards met with it on Kangaroo Island and in the Belts of the Murray. In all these situations it evinced a decided preference for the *Eucalypti*, among the smaller branches and flowers of which it was busily engaged in extracting pollen and honey from the flower-cups. The trees in the Belts of the Murray and on Kangaroo Island are of a dwarf character, while those of the Upper Torrens are very lofty; yet each appeared to be equally resorted to."

Captain S. A. White has written me: "Is quite a common bird on Kangaroo Island and some parts of Eyre's Peninsula. Is a very inquisitive bird and if one keeps still it will often come quite close, stretching out its neck and putting its head on one side peering at the unusual object and giving forth a strange scolding note. They were nesting on Eyre's Peninsula in October."

Mr. J. W. Mellor also writes: "I found this species in fair numbers on Kangaroo Island and also on Eyre and Yorke's Peninsulas. This bird prefers the moderately open mallee and bush country, and in the 'blackboy' country where the tall grass-trees grow, the birds, I noted, would fly to these

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grass-trees and perch on the tall slender flower spikes, which grow to the height of eight or ten feet out of the top of the tree itself; they suck the honey from these flowers, also catch the insects that are attracted by the sweet nectar of the flowers, while the bloom of the stunted eucalypts growing in this kind of country is also frequented."

Mr. A. G. Campbell has written: "On Kangaroo Island is common in the moorland and heather country, but not in heavy timber. In North-western Victoria it is not uncommon through the mallee adjacent to the South Australian border. It is mainly a South Australian form."

Mr. F. E. Howe also wrote me: "During October 1909 we were fortunate enough to find four nests of this elegant and rare Honey-eater. They were often noticed in pairs far apart as we drove along the track from Pinnaroo to Kow Plains, and were always noticed by seeing them suddenly dart up from the scrub on to a dead stick of the mallee and as suddenly dart away again. However, at No. 8 bore a fair number were congregated and were nesting in a certain scrubby bush that grows to a height of six or eight feet and to which they seem very partial. Three nests contained young just hatched and the other held a pair of hard set eggs. The young, which were about two or three days old, were blind and covered with light brown down; the gape and the mouth were both yellow. I think this bird is about the most agile of the group."

Chandler, reporting upon the bird life of the Kow Plains, Victoria, noted: "The favourite haunt of this species is among a species of dwarf acacia. All the nests which we found were situated in this acacia. *P. cratitia* is a noisy bird. It constantly utters a chattering call. About 200 yards from camp the birds were exceedingly numerous in the blossoming mallee."

Mr. Edwin Ashby sent me some comments upon my 1913 "List" of some value, thus: "The mallee country of Victoria and the mallee country of what used to be called the 90-mile desert is all one belt of country. There is not likely to be more than one subspecies inhabiting it. On the other hand, the mallee of Eyre's Peninsula extends right through into West Australia. Therefore, for purposes of locality I should divide South Australia into two portions, the Murray valley and all east of it being combined with the mallee district of Victoria. I think you will find this correct."

Mr. Tom Carter has written me: "According to your 'Reference List,' 1912, the type of this subspecies (*occidentalis* Cabanis) was obtained at Albany, W.A. I have, in the course of many visits to that town, systematically walked over the whole surrounding country within a radius of seven miles or more and have never seen or heard a single specimen of this bird. The nearest country that seems suitable for it is the edge of the great sand-plain

WATTLE-CHEEKED HONEY-EATER.

(scrubby) that begins about thirty miles north-east of Albany and extends to the Stirling Ranges.

"This species inhabits open light timbered country, as scrubby sandplain and 'Marlock' scrub. They are fairly plentiful in such country twenty to thirty miles east, and south-east of Broome Hill. They are very restless, noisy and pugnacious. August 20/08. Many seen and a pair shot 35 miles S.E. of Broome Hill. Sept. 12/08. Nest containing two incubated eggs, built five feet above ground, east of Broome Hill. Oct. 10/08. Two males and one female obtained at above locality, male evidently breeding. Oct. 2/10. Nest with two fresh eggs built 3 feet 6 inches off ground in a dwarf fir tree. Many fledged young seen about same date, also on March 15/10."

Writing about the birds of the Stirling Ranges, South-west Australia, Whitlock has stated: "Mr. Milligan describes this bird 'as local in a pronounced degree.' I, on the other hand, found it not uncommon. This may have been due either to concentration brought about by the recent bush fires or to my having made a closer examination of the country than was possible in his case. Wherever any extensive patches of marlock or mallee had escaped the general destruction, there I found this beautiful Honey-eater. It is hardly a bird likely to escape observation. If it may not be described as inquisitive, like *Ptilotis sonora*, it is equally determined to make its presence known. In its general habits it reminded me of *Ptilotis leucotis*, or rather *P. novænorciæ*, as our interior form is called. It was equally noisy and active, and its notes are heard here, there, and everywhere, when an intruder invades its haunts. Sometimes a single bird, or even a pair, would approach closely and peer through the intervening branches at the stranger, but more often they flew from point to point in a circular course, continually calling to one another with their unmusical notes. I found eight or nine nests in all, but their discovery was by no means an easy task. The first I obtained in a very small dwarf *Banksia*. The nest was suspended from the foliage of the bush in a little recess, and I considered myself lucky not to pass it by unobserved. It contained two fresh eggs. All the other nests I found—some with eggs, others with newly hatched young—were very low down; none higher than three feet. All were very neatly made of green grasses, held together by spiders' webs and lined with the same soft material. I remarked the situation of one I found building by fixing a piece of cotton-wool to a dry twig. This was promptly seized by the female and used as lining for her nest. The eggs have been accurately described in Mr. A. J. Campbell's work (see p. 401), but both eggs and nest appear to be remarkably small for the size of the parent bird. Generally, I think, however, the female is the smaller of the two sexes in this species. (This is usually the case in the genus *Ptilotis*. Eds.).

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I was not able to obtain a fully grown nestling. I watched a pair I found when newly hatched for more than a week, but their growth was slow, and at that period they showed no signs of a wattle. When I returned to the nest still later both were gone, and only a few shreds of the nest remained."

Milligan's notes from the Stirling Ranges were restricted to a few words as quoted by Whitlock above: "only two small companies being discovered, and each within a restricted area of an acre," and he later wrote: "Fairly numerous in the Wongan Hills. Breeding season . . ." with no further particulars.

Gould described this species from the Interior of South Australia, and later explained that he first met with it on the ranges near the Upper Torrens, and that afterwards he met with it on Kangaroo Island and the Belts of the Murray. When I prepared my "Reference List" I accepted South Australia as the type locality and therefore named the Kangaroo Island subspecies. Examination of the Gouldian specimens in Philadelphia by Witmer Stone revealed the fact that a bird from Kangaroo Island had been figured by Gould, and therefore Verreaux called it "type" and Stone so considered it. At that time I accepted Witmer Stone's conclusions and therefore named the Eyre Peninsula bird, treating the Kangaroo Island bird as typical, but I now regard the Upper Torrens as the correct type locality.

A. G. Campbell wrote about the birds of Kangaroo Island noting: "This beautiful bird is the only other representative of its large genus. It inhabits the scrub-covered moorlands not far from the sea, and the brush-like tea-tree that grows on the river flats. But in comparison with specimens from Nhill, Victoria, it is found of darker plumage, and the wings and tail are blackish instead of brownish. The bill, wing, and tarsus are all slightly larger. The male bird is distinguished by a blackish collar on the hind-neck and a darker crown."

Captain S. A. White has also noted on Kangaroo Island: "Strange to say, more than one of the mature birds was adorned with wattles that were nearly white."

The first differentiation in connection with this species was made by Cabanis when he described a West Australian bird as a new species, *L. occidentalis*, on account of its smaller size and minor differences in colouring which might not have been constant. Gould did not accept it, but stated that it might be recognisable. It was, however, included by Ramsay, and I admitted it in my first "Handlist" but in my "Reference" reduced it to subspecific range and added three more subspecies, thus:

Ptilotis cratitia cratitia Gould.

South Australia.

Ptilotis cratitia halmaturina Mathews.

WATTLE-CHEEKED HONEY-EATER.

"Differs from *P. c. cratitia* in its larger size and generally brighter coloration. Kangaroo Island."

Kangaroo Island.

Ptilotis cratitia howei Mathews.

"Differs from *P. c. cratitia* in its generally paler coloration. Kow Plains, Victoria."

Victoria.

Ptilotis cratitia stirlingi Mathews.

"Differs from *P. c. occidentalis* in its much lighter coloration above, especially on the head, and its more uniform greyish under coloration. Stirling Ranges, West Australia.

Ptilotis cratitia occidentalis (Cabanis).

West Australia (Albany).

Through the transference of the Gouldian name I proposed

Ptilotis cratitia samueli.

"Differs from *P. c. cratitia* (from Kangaroo Island) in its smaller size and generally duller coloration. Eyre's Peninsula, South Australia."

and I had to rename this

Ptilotis cratitia zarda,

as the above name was twice used.

Just after my "List" was published Campbell wrote: "Dr. E. P. Ramsay in his *Tabular List of Australian Birds* (1888) indicates *P. cratitia* for Port Darwin and Gulf of Carpentaria districts. Mr. A. J. North, in a more recent work (*Special Catalogue No. 1* of the Australian Museum), does not mention either of those districts for *P. cratitia*. However, in the collection above mentioned is a *Ptilotis* from Burketown resembling *cratitia*, but its general coloration is more yellow, especially the margins of the primaries and tail-feathers, about the gape, etc., while the dark mark across the face is brownish instead of dull black. There is no collector's note on the label to indicate what was the colour of the naked flesh at the gape in the living bird, which in *P. cratitia* is lilac. As the bird was collected near the shores of the Gulf of Carpentaria, the name *Ptilotis carpentariensis* is suggested for it."

I included this in my 1913 "List" as a subspecies of *P. cratitia*, but if so it is curious that Captain White never met with it in the interior, and the collector's name would be useful. Was it one of the Grant collection? Some of his birds are not reliable, viz., *Pachycephala dubia*, c.f. my remarks in *Austral Av. Rec.*, Vol. II., p. 90.

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I admitted :

Lichenostomus cratitius cratitius (Gould).

Kangaroo Island.

Lichenostomus cratitius zarda (Mathews).

South Australia.

Lichenostomus cratitius howei (Mathews).

Victoria.

Lichenostomus cratitius carpentariensis (Campbell).

Gulf of Carpentaria, Queensland.

Lichenostomus cratitius stirlingi (Mathews).

Stirling Ranges, West Australia.

Lichenostomus cratitius occidentalis Cabanis.

South-west Australia (Albany district).

In view of Ashby's suggestion that the birds frequenting the 90-mile Desert of South Australia and the Victorian Mallee are the same, I find that in some cases the birds from these two localities are distinctly separable, so that each case must be dealt with with the material available. Again, Carter has suggested that it does not occur at Albany itself but that it reaches eastward to the Stirling Ranges, while Milligan found it commonly in the Wongan Hills, but Alexander does not include it in his *List of Birds of the Perth District*. It is possible therefore that Cabanis' specimen came from the Wongan Hills, as it would not have been secured in the Stirling Range districts at that early date.

The names would then be :

Lichenostomus cratitius cratitius (Gould).

Upper Torrens, South Australia.

Lichenostomus cratitius howei (Mathews).

Kow Plains, Victoria.

Lichenostomus cratitius zarda (Mathews).

Eyre Peninsula, South Australia.

Lichenostomus cratitius stirlingi (Mathews).

Stirling Ranges, West Australia.

The inter-relationships of these four require re-investigation.

Lichenostomus cratitius occidentalis Cabanis.

West Australia (Albany may be wrong ?

Wongan Hills).

(?) *Lichenostomus (cratitius) carpentariensis* (Campbell).

Burketown, Gulf of Carpentaria.

GENUS—SACRAMELA.

SACRAMELA Mathews, Austral Avian Record, Vol.

II., pt. 5, p. 111, Sept. 24th, 1914. Type (by

original designation) *Ptilotis keartlandi* North.

I WROTE at the introduction of this name: "Differs from *Lichenostomus* Cabanis in the absence of the fleshy caruncle at the base of the bill." When I separated the "genus *Ptilotis*" into sections I arranged under *Lichenostomus* the four species *cratitius*, *keartlandi*, *ornatus* and *plumulus*, and under *Ptilotula* I placed *flavescens* and *penicillata*. Later, as above, I recognised that *Lichenostomus cratitius* alone possessed a fleshy wattle at gape and separated the other three under the name *Sacramela*. I am leaving these under this name as, although there is very little difference between *Ptilotula* and *Sacramela*, I note in the dried specimens apparent differences in the tongue structure, and this point needs investigation upon recent specimens. If I lump these birds this will not be undertaken, but if an apparent "unnecessary" genus is retained it will invite criticism.

Small *Ptilotis* with short black bills, long wings, long tail and long slender legs and small feet.

The bill is short, shorter than the head, laterally compressed, basal expansion slight, culmen semi-keeled and arched; under mandible nearly straight; interramal space triangular, feathered, nearly half the length of the bill; gonys straight not angulate, a little depressed anteriorly; nasal groove long but not half the length of the short bill, linear nostrils pervious, operculum large.

The wing has the first primary small, less than half the length of the second, which nearly equals the third, which is a little longer than the sixth; the third, fourth and fifth primaries subequal and longest; the second primary much longer than the secondaries. Tail long and square.

The legs are comparatively long and slender as in the preceding genus, the feet similar and small.

Key to the Species.

Head grey	..	..	..	..	..	<i>keartlandi</i> .
Head greenish-yellow	..	..	..	..	..	<i>ornata</i> .

SACRAMELA KEARTLANDI.

GREY-HEADED HONEY-EATER.

(PLATE 538.)

PTILOIS KEARTLANDI North, Ibis, 1895, p. 340, July : McMinn's Range, Central Australia.

Ptilotis keartlandi North, Ibis, 1895, p. 340 ; *id.*, Rep. Horn. Sci. Exped. Cent. Aust., Vol. II., Zool., p. 93, pl. vi., 1896 ; Hall, Key Birds Austr., p. 42, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 402, 1901 ; Hall, Emu, Vol. I., p. 98, 1902 (N.W.A.) ; (?) Le Souëf, *ib.*, Vol. II., p. 147, 1903 (N.T.) ; Carter, *ib.*, Vol. III., p. 92, 1903 (M.W.A.) ; North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 149, 1907 ; Mathews, Handl. Birds Austral., p. 96, 1908 ; Whitlock, Emu, Vol. VIII., p. 184, 1909 (W.A.) ; Hill, *ib.*, Vol. XII., p. 244, 1913 (Central Australia) ; Campbell and Kershaw, *ib.*, p. 277 ; Macgillivray, *ib.*, Vol. XIII., p. 178, 1914 (Q.) ; Campbell, *ib.*, Vol. XVIII., p. 5, 1918.

Ptilotis keartlandi keartlandi Mathews, Nov. Zool., Vol. XVIII., p. 409, Jan. 31st, 1912.

Ptilotis keartlandi mungi Mathews, *ib.* : Mungi, North-west Australia.

Ptilotis keartlandi alexandrensis Mathews, *ib.* : Alexandra, Northern Territory.

Lichenostomus keartlandi keartlandi Mathews, List Birds Austr., p. 279, 1913.

Lichenostomus keartlandi mungi Mathews, *ib.*

Lichenostomus keartlandi alexandrensis Mathews, *ib.*

Lichenostomus keartlandi S. A. White, Trans. Roy. Soc. Sth. Austr., Vol. XXXVIII., p. 436, 1914 ; *id.*, Emu, Vol. XIV., p. 191, 1915.

Sacramela keartlandi cloatesensis Mathews, Austral Av. Rec., Vol. V., pts. 2-3, p. 37, Feb. 21st, 1923 : Point Cloates.

Sacramela keartlandi mungi Mathews, *ib.*

Meliphaga keartlandi Whitlock, Emu, Vol. XXIII., p. 277, 1924.

DISTRIBUTION. Central Australia, reaching to the coast in Mid- and North-west Australia and northwards to the Gulf of Carpentaria.

Adult male. Feathers of the top of the head light grey, suffused with yellow ; upper back, mantle, wing-coverts and scapulars greyish-yellow ; rump yellowish-buff ; upper tail-coverts darker ; middle tail-feathers brownish-olive, narrowly margined on both webs with olive-yellow ; outer tail-feathers ash-brown, margined on the outer web with golden-yellow, and narrowly margined on the inner web with



H. Grönvold, del.

Witherby & Co

SACRAMELA KEARTLANDI
(GREY-HEADED HONEY-EATER.)

SACRAMELA ORNATA
(YELLOW-PLUMED HONEY-EATER.)

GREY-HEADED HONEY-EATER.

whitish; primaries and secondaries ash-brown, with the outer web at the base olive-yellow and narrowly margined towards the tip with whitish; lores, feathers over the eye and ear-coverts dark grey; behind the ear-coverts a patch of golden-yellow plumes; whole of the under-surface of the body primrose-yellow, brightest on the throat, the feathers of the throat and breast with indistinct streaks of brownish-grey. Eyes brown, feet and tarsus pale brown, bill black, with basal half of tomium yellow. Total length 148 mm.; culmen 12, wing 78, tail 64, tarsus 21. Figured. Collected at Mungi, eight miles S.E. of Mount Alexander, West Kimberley, North-west Australia, on the 18th of June, 1911, and is the type of *P. k. mungi*.

Adult female. General colour of the upper-surface pale ochreous-brown tinged with grey on the fore-part of the head; outer webs of flight-quills fringed with yellow, the inner ones dark brown margined with buff; tail pale brown tinged with yellow; lores and eye-ring blackish; ear-coverts bronze-brown tipped with yellow; chin, throat, breast, abdomen, sides of body, and under tail-coverts pale yellow; axillaries and under wing-coverts yellowish-buff; under-surface of flight-quills hair-brown with buff margins; lower aspect of tail bronze-yellow. Eyes hazel, bill dark purplish-horn, legs and feet flesh. Collected at Point Cloates, Mid-west Australia, on the 2nd of July, 1900, and is *cloatesensis*.

Young female. Top of head, lores, and nape dull grey; ear-coverts and space in front of the eye rust-brown; hind-neck, sides of neck, back, rump, upper tail-coverts, axillaries, and upper wing-coverts cinnamon-buff; bastard-wing, primary-coverts, and flight-quills dark brown fringed with yellow on the outer webs, the latter margined with buff on the inner webs; tail pale brown tinged with yellow; chin, throat, sides of face, breast, abdomen, sides of body, thighs, and under tail-coverts pale yellow, more or less tinged with ochreous on the throat and breast; axillaries and under wing-coverts pale buff; under-surface of flight-quills hair-brown margined with pale buff; lower aspect of tail pale yellow. Eyes brown, legs grey. Collected on Taylor's Creek, Nullagine, Mid-west Australia, on the 15th of April, 1901.

Eggs. Two eggs usually form the clutch. A pair taken at Marble Bar, Western Australia, on the 28th of September, 1914, is of a pale flesh-tint in the ground-colour, marked, chiefly about the larger ends, with spots of dull reddish-brown. In shape rather swollen ovals. Surface of shell smooth and slightly glossy. 18-19 by 14 mm.

Nest. A small cup-shaped structure suspended near the extremity of a small branch, and varying at heights from 2 to 15 feet from the ground.

Breeding-months. July to November; May and June, or after rain.

MR. TOM CARTER writes: "In your 1912 'Reference List' Keartland's Honey-eater (Grey-headed) and its two subspecies are not given as occurring on or near *the coast* in the northern areas of West Australia. It is the typical Honey-eater, and common, all along the rugged ranges from Point Cloates to the North-west Cape. These ranges are, in places, less than half a mile from the sea. This species is also common on the table-land broken country that lies behind these ranges across to the Exmouth Gulf. The birds were never seen out of this region of the North-west Cape peninsula, and seem to like rough country. They feed *mostly* in the stunted desert white gum trees, but also obtain food from the blossoms of scattered scrub along the ranges.

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In 1890, when my only literature on Australian birds was Gould's Handbook, I shot some of these birds, seeing that they differed from *Ptilotis sonora*, and sent a specimen to Mr. A. J. Campbell, who concluded it was only a variety of *P. sonora* (vide *Nests and Eggs*, page 403). In 1895 North described this bird as a new species.

"The birds are very active in their movements, constantly uttering their pleasant little notes, and were particularly numerous in the Yardie Creek, where are many clumps of small white gum saplings, and there is permanent water, the only other permanent pool on the peninsula being on the Exmouth Gulf side, about twenty-five miles to the North-east. May 9, 1900. A nest containing two incubated eggs was found, five feet from ground, suspended in small twigs of a desert gum tree. Fledged young were shot at various dates, leading to the supposition that this species breeds any time after rains have fallen."

Captain S. A. White has written me: "I met with this bird in the type locality in 1913 within 100 miles of where the Horn Expedition found it, and then again I met with it in numbers in the far North-west (Musgrave and Everard Ranges) in 1914."

Their call, although very like other members of the genus, is still easily distinguished from them. They have a habit of darting about amongst the low trees and bushes uttering a scolding note, much after the manner of *M. sonora*.

Hall published Mr. J. P. Rogers' notes from North-west Australia as follows: "This is one of the most plentiful of Honey-eaters here. They are everywhere. A while ago (prior to 8/2/00) they were feeding upon the mistletoe blossoms, which grow plentifully in a small wattle, but they deserted as soon as the eucalypts came into bloom. On 24/7/00 three nests were found in wattle trees, close together, and all in similar positions—a slender horizontal fork. A clutch of two eggs I found on 4/6/00. On 29/11/99 I saw a very large number of this species. A well was being cleaned, but only this bird seemed to drink. It was very tame. While standing quietly on the bracehead of the well one alighted upon my hat, and another upon one of my boots. Soon after this I saw as many as fifteen upon the rim of the bucket, and several more hovering over their heads, impatiently waiting their opportunity. I longed for a camera and the knowledge to work it."

Whitlock then met with it on the Pilbarra Goldfield and wrote: "I first encountered this species at Dépôt Creek, a locality about 65 miles from the coast. I shot a single example from amongst a number of Carter Honey-eaters in fairly thick scrub growing on the banks of the creek. It was not until I was within a few miles of Marble Bar that I obtained another. Later

GREY-HEADED HONEY-EATER.

on, when I began to do a little ornithological work amongst the creeks near my camp, I frequently came across it, and secured further examples. Unlike *Ptilotis carteri* the present species seems rather to keep away from water than to seek it. Possibly this may be due to the habits of special food plants, which in their turn flourish best in drier situations. The favourite haunt of this Honey-eater is the rocky and narrow gullies running up to and amongst the ranges, and where *Ptilotis carteri* does not penetrate. It lives mostly in pairs, though I have often flushed five or six from some favourite flowering bush. Like all members of the genus *Ptilotis* it is a lively species, though it lacks the exuberant vivacity of *P. carteri*. It is equally as inquisitive as the latter, and will fly up to within a few feet of the intruder provided he remains motionless. The notes are very variable, some of them musical, but others, again, rather harsh. It can hardly be called a singer, its efforts in that direction being far inferior to those of *P. carteri*; but, on the other hand, in variety of note or call it far exceeds the latter. It is an early breeder, and by the middle of July I found a nest containing young a day or two old, and a second nest with birds nearly ready to fly. These nests were nearly two miles from permanent water, and at a considerable elevation above the valley of the Coongan. In all I found about ten nests. . . In every case they were built low down, and always either in some shrub or large plant growing in the bed of a creek or on the bank close at hand. No concealment is aimed at. The favourite site is a branch of the prickly, grey-green-leaved canjie bushes; the materials of which the nest is constructed—fine strips of bark, spiders' webs, and vegetable down—harmonizing wonderfully with the colour of the foliage. The nest is usually, but not always, suspended, and in several instances I found nests in a solitary canjie bush of the most meagre and stunted dimensions, and where one would never have thought of searching. Another I found at the head of a sterile and rocky gully in a flowering hibiscus plant—the only shrub in the neighbourhood! Another nest was in the fork of a spreading but very open-branched shrub of considerable size, but the nest was easily visible when once located. The female is not a close sitter, and on the approach of danger is warned by the male, when she quickly slips off the nest and joins him in his efforts to attract attention to himself and from the locality of the nest. Two is the invariable number of eggs, which are creamy-white in ground-colour and sparingly spotted or clouded with ferruginous blotches. The shells are very fragile, and it is quite impossible to deal with highly incubated eggs. If the first brood is successful the parents do not, I think, breed again the same season. The best way to find the nest is to go to some creek or gully where one or two pairs are to be met with, and to watch for an individual passing by with building material in its

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beak. It is easy in these treeless gullies to follow its flight with the eye, and eventually to locate the nest. During building operations the birds seem to lose all suspicion, and I have watched operations from a distance of only a very few feet. I find the intensity of the striations of the breast varies somewhat. What I take to be old males are the most marked. In the female they are sometimes very faint, but I could still detect traces in the only pair of nestlings I was able to examine."

Hall had remarked upon Rogers' specimens that one adult (female) had a rich yellowish throat, chest and breast, with only an indistinct trace of lines upon portions of them. They seem to have disappeared with age; yet this specimen has the basal half of the lower mandible pale yellow, with the distal portion nutty-brown as on the upper mandible. Nestlings have pale yellowish-brown bills and bright yellow gapes.

Macgillivray has recorded it from Queensland, writing: "First noted on the 21st April, 1910, on a turpentine and spinifex ridge at Courtenay's Creek, three miles from Cloncurry, and afterwards found to be very numerous in this class of country. Also frequently met with at Donaldson, on the Leichhardt, on stony ridges clothed in stunted trees and shrubs."

Captain S. A. White has written: "Fairly numerous in the Musgrave and Everard Ranges. The whole of the plumage, especially the yellow on breast and throat, is much brighter than that of the birds from the type locality."

Campbell has observed: "Coongan or Marble Bar birds appear the same as those from the more central (type) locality. Some Western *individuals* may be paler in colour, but not paler than North's original figure. For instance one (♀) taken on the Coongan agrees with Mathews's *munji*."

This bird was named by North from specimens collected by the Horn Scientific Expedition in Central Australia, and Carter's birds previously procured were recognised as the same. When I drew up my "Reference List" in 1912 I arranged:

Ptilotis keartlandi keartlandi North.

Central Australia.

Ptilotis keartlandi munji Mathews.

"Differs from *P. k. keartlandi* in its paler coloration above and below, especially on the head. Mungi, North-west Australia.

Interior of North-west Australia.

Ptilotis keartlandi alexandrensis Mathews.

"Differs from *P. k. munji* in its less yellow coloration below. Alexandra, Northern Territory."

Interior of Northern Territory.

GREY-HEADED HONEY-EATER.

These were placed in the genus *Lichenostomus* in my 1913 "List," but I later introduced the genus name *Sacramela* for this form. Probably quite a number of races will later be named, and I here allow five:

Sacramela keartlandi keartlandi (North).

McMinns Range, Central Australia.

Sacramela keartlandi whiteorum subsp. nov.

As noted by Capt. S. A. White this is much brighter than the preceding.

Musgrave and Everard Ranges, Central Australia.

Sacramela keartlandi alexandrensis (Mathews).

Interior of Northern Territory and Queensland.

Sacramela keartlandi mungi (Mathews).

Interior of North-west Australia.

Sacramela keartlandi cloatesensis Mathews.

Darker than the preceding, more nearly approaching the typical form.

Point Cloates, Mid-west Australia.

Order PASSERIFORMES.

No. 679.

Family MELITHREPTIDÆ.

SACRAMELA ORNATA.

YELLOW-PLUMED HONEY-EATER.

(PLATE 538.)

PTILOIS ORNATUS Gould, Synops. Birds Austr., pt. iv. (pl. 72), April 1st, 1838 : Swan River, West Australia.

Ptilotis ornatus Gould, Synops. Birds Austr., pt. iv. (pl. 72), 1838 ; *id.*, Birds Austr., pt. II. (Vol. IV., pl. 39), March 1st, 1841 ; *id.*, Handb. Birds Austr., Vol. I., p. 515, 1865 ; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 189, 1878 ; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 244, 1884 ; Ramsay, Tab. List Austr. Birds, p. 12, 1888 ; Hall, Key Birds Austr., p. 43, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 406, 1901 ; Milligan, Emu, Vol. III., pp. 11, 18, 22, 1903 (W.A.) ; Hill, *ib.*, p. 106, 1903 (W.A.) ; Milligan, *ib.*, Vol. IV., pp. 6-10, 1904 (W.A.) ; North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 135, 1907 ; Mathews, Handl. Birds Austral., p. 96, 1908 ; Howe, Emu, Vol. VIII., pp. 132-7, 1909 (Vic.) ; Gibson, *ib.*, Vol. IX., p. 75, 1909 (W.A.) ; Crossman, *ib.*, p. 90 (W.A.) ; Hall, *ib.*, p. 129, 1910 (S.A.) ; Howe, *ib.*, p. 233 (Vic.) ; Whitlock, *ib.*, Vol. X., p. 312, 1911 (W.A.) ; S. A. White, *ib.*, Vol. XII., p. 3, 1912 (S.A.) ; Wilson, *ib.*, p. 38 (Vic.) ; S. A. White, *ib.*, p. 180, 1913 (S.A.) ; *id.*, *ib.*, Vol. XIII., p. 32, 1913 (S.A.) ; Chandler, *ib.*, Vol. XIII., p. 43, 1913 (Vic.) ; S. A. White, *ib.*, p. 128, 1914 (S.A.) ; Cleland, *ib.*, p. 131 (Food) ; Elliott, *ib.*, Vol. XV., p. 179, 1916 (W.A.) ; Alexander, *ib.*, Vol. XX., p. 167, 1921 (W.A.).

Ptilotis novæhollandiæ Mathews, Nov. Zool., Vol. XVIII., p. 19, 1911.

Not *Muscicapa novæhollandiæ* Latham, Index Ornith., Vol. II, p. 478, 1790.

Ptilotis ornata ornata Mathews, Nov. Zool., Vol. XVIII., p. 410, Jan. 31st, 1912.

Ptilotis ornata munna Mathews, *ib.* : Stirling Ranges, West Australia.

Ptilotis ornata tailemi Mathews *ib.* : Tailem Bend, South Australia.

Ptilotis ornata wesleydalei Mathews, Bull. Brit. Orn. Club, Vol. XXXI., p. 68, March 20th, 1913 : Broome Hill, South-west Australia.

Ptilotis ornata underbooli Mathews, *ib.* : Underbool, Victoria.

Lichenostomus ornatus ornatus Mathews, List Birds Austr., p. 279, 1913.

Lichenostomus ornatus wesleydalei Mathews, *ib.*

Lichenostomus ornatus munna Mathews, *ib.*

Lichenostomus ornatus tailemi Mathews, *ib.* ; Belcher, Birds Geelong, p. 343, 1914.

Sacramela ornata Mathews, Austral Av. Rec., Vol. II., p. 111, 1914.

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Sacramela ornata ornata Mathews, *ib.*

Sacramela ornata wesleydalei Mathews, *ib.*

Sacramela ornata munna Mathews, *ib.*

Sacramela ornata tailemi Mathews, *ib.*

Sacramela ornata underbooli Mathews, *ib.*

Meliphaga ornata McGilp, *Emu*, Vol. XXII., p. 286, 1923.

DISTRIBUTION. New South Wales, Victoria, South Australia, South-west Australia.

Adult male. Feathers of the lores, sides of the face, cheeks, top of the head and hind-neck greenish-yellow; upper mantle, back, rump, scapulars and wing-coverts greyish-brown; upper tail-coverts yellowish-green; tail-feathers ash-brown with the outer webs golden-green; primaries ash-brown, margined on the inner web, towards the base, with golden-yellow and towards the tip with whitish; an indistinct line of yellowish-green from the angle of the gape to below the eyes; a tuft of long golden-yellow plumes below the ear-coverts; chin, throat, neck, chest and sides of the body yellowish-white, streaked with blackish-brown; feathers of the chin and upper throat washed with yellow; belly and under tail-coverts creamy-white with only a few mesial streaks. Eyes hazel, legs and feet fleshy, bill black. Total length 168 mm.: culmen 11, wing 87, tail 73, tarsus 23. Figured. Collected at Broome Hill, South-west Australia, on the 16th of June, 1908, and is the type of *P. o. wesleydalei*.

Adult female. Feathers of the lores, fore-head and crown greenish-yellow; upper back, mantle, wing-coverts, lower back and rump brownish-grey washed with olive; upper tail-coverts greenish-yellow; middle tail-feathers yellowish-green, outer feathers greyish-brown, with the outer webs yellowish-olive, slightly margined at the tip with white; primaries and secondaries greyish-brown with the outer webs yellowish-olive towards the base and whitish towards the tips; a small black spot in front of the eye; a streak from the gape to below the eye golden-yellow; a tuft of long bright golden-yellow plumes below the ear-coverts; chin, throat, chest, belly and sides of the body white, each feather mesially streaked with ash-brown; abdomen and under tail-coverts white. Eyes hazel. Total length 160 mm.; culmen 11, wing 77, tail 67, tarsus 21. Figured. Collected at Underbool, Victoria, on the 12th of September, 1910, and is the type of *P. o. underbooli*.

Nearly adult male. Crown of head and sides of face yellow with brown centres to the feathers on the former; a streak of yellow on the sides of the neck; lores and fore-part of eye-ring blackish; back, rump, upper tail-coverts, scapulars, and lesser upper wing-coverts pale umber-brown; bastard-wing, greater coverts, primary-coverts, and flight-quills dark brown fringed with greenish-yellow and the latter margined on the inner webs with buff; tail-feathers dark brown fringed on the outer webs with bronze-yellow; under-surface for the greater part yellowish-white with dusky bases to the feathers—which imparts a greyish appearance; thighs rust-brown; under tail-coverts pale yellow; under wing-coverts buff; under-surface of flight-quills dark brown margined with buff; lower aspect of tail similar to its upper-surface but paler. Eyes hazel, bill fleshy-horn with base orange; feet and legs purple-flesh. Collected at Broome Hill, South-west Australia, on the 8th of February, 1919.

Immature male. Top of head, hind-neck, back, rump, and upper tail-coverts, scapulars, and lesser upper wing-coverts tawny-brown; greater coverts, bastard-wing, and primary-coverts tinged with green; flight-quills dark brown fringed with dull yellow on the outer webs and margined on the inner ones; sides of the face like the

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top of the head ; a dark spot in front of the eye ; a yellow streak from the gape to below the eye ; hinder face marked with sulphur-yellow ; under-surface greyish-white on the throat, becoming greyish on the breast, and white on the abdomen and under tail-coverts ; under wing-coverts buffy-white ; under-surface of flight-quills pale brown with white margins ; lower aspect of tail similar to its upper-surface. Eyes hazel, bill orange, legs and feet flesh. Collected at Killerberin, South-west Australia, on the 6th of January, 1903.

Eggs. Two eggs usually form the clutch. A clutch of two eggs taken at Kow Plains, North-west Victoria, on the 16th of September, 1912, is of a beautiful salmon-pink ground-colour, spotted (particularly at the larger end) with rich or dark reddish-brown and purplish-grey markings. Ovals in shape. Surface of shell smooth and slightly glossy. A. 19-21 by 14 mm.

Nest. A neat cup-shaped structure, composed of grasses and thin strips of bark and placed in a small tree or bush. Dimensions over all : $2\frac{1}{2}$ to 3 inches by $1\frac{1}{2}$ to $1\frac{3}{4}$ inches by depth.

Cup-shaped, suspended from a twig by the rims. Composed entirely of fine green grass, with no lining. Pieces of thistledown and spiders' cocoons on the outside. The nest has very thin sides. Inside measurements : $1\frac{1}{2}$ inches deep by almost 2 wide.

Cup-shaped, lightly constructed of fine grass intermingled with spiders' webs. Inside measurements : $1\frac{3}{4}$ inches by 1. (South Australia.)

Breeding-months. August to end November, even to January.

THIS is another of the birds described by Gould before he went to Australia and of which he later wrote : " It was a source of much gratification to myself to have unexpectedly found this elegant little bird in that rich arboretum, the Belts of the Murray, which had already supplied me with so many novelties. It was there confined to trees of a dwarf growth, while in the country in the neighbourhood of Swan River I am informed it is seen on the topmost branches of the gum and mahogany trees, elinging and flitting about the blossoms, not unfrequently descending to the ground and hopping about beneath the branches and near the boles of the larger trees, doubtless in search of insects. It has rather a loud ringing and not unpleasing song, which is constantly poured forth.

Mr. Sandland has written me : " Very common at Burra, South Australia," and Captain S. A. White also sends me a note : " A common bird in many places in South Australia, especially Eyre's Peninsula. I have also found them fairly numerous in the Mallee round Ooldea on the edge of the Nullarbor Plain. They are to be met with both in the Mallee and in the big gum country in South Australia, where they begin nesting in September or late in August. The nest is a cup-shaped structure of dry grass, cobwebs and rootlets, generally suspended in a drooping bunch of gum leaves. The usual clutch is three. Like so many of the Honey-eaters, insects play a big

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part in their diet. Their note is a sharp one and they are very active little birds. I have not seen them in the interior."

Mr. F. E. Howe wrote me: "Was exceedingly plentiful from Tailern Bend to Kow Plains and many nests containing eggs and young were noticed. Young are born blind and featherless, gape and mouth orange."

Mr. J. W. Mellor also wrote: "This bird is plentiful in the Mallee and timbered country of South Australia, especially towards the west on Eyre Peninsula and Yorke Peninsula and away towards the West Australian border; in these places it takes the place of the White-plumed Honey-eater (*P. pencillata*) of the Adelaide Plains and hills. While travelling in various places I have had many opportunities of studying them; their habits very nearly assimilate those of the White-plumed species, sucking honey from the various eucalyptus flowers and may also be seen searching for insect food amongst the foliage of both the tall and dwarfed trees, and at times sallying out into mid-air in pursuit of some insect on the wing, catching it with dexterity and returning to the tree to eat the tit-bit. The nesting time is from September to November, but they sometimes start about the end of August and continue until January if the season be favourable, laying at least twice."

Mr. Thos. P. Austin has written me from Cobbara, New South Wales: "It is rather an unusual thing to see this species in this district, but towards the end of July, 1914, they were here in incredible numbers; no matter where I went their cheerful notes could be heard coming from hundreds, in some places thousands, of birds the whole day long. I doubt if I ever heard the voices of such a number of birds of any one species at the same time in this district. They did not remain to breed, but disappeared just as quickly as they arrived. With the exception of the time mentioned I have only seen small flocks migrating. During 1915 they were flying past my house for weeks, flock after flock, all coming and going in the same direction, and they must have come from some district where they had just finished breeding because most of the birds were in a very immature state of plumage and some which I shot for identification appeared to have been only a few days out of the nest. I note you did not give this species as occurring in this State."

Chandler, writing about the birds on Kow Plains, Victoria, stated: "This is the common Honey-eater of the Mallee. The birds are to be seen literally in thousands. Dozens of nests were found, in most cases situated in the mallee leaves."

Mr. Tom Carter has given me the following note: "In your 'Reference List,' 1912, the range of the Yellow-plumed Honey-eater is given as West

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Australia generally. It is a common species through most of the south-west, south of the Irwin River (Lat. 29° S.), but is not found in the dense jarrah and red gum forests of the extreme south-west corner. These birds prefer lightly timbered country such as occurs along the Great Southern Railway, and are mostly found feeding in white gum trees. They were *not* observed near Albany nor within about forty miles north of there, where white gum begins to take the place of jarrah and red gums. They are common about Kellerberin. They are the commonest Honey-eaters in the neighbourhood of Broome Hill, and their loud cheerful notes are heard everywhere. They much resemble *Ptilotis carteri* in their active prying habits. The nests are small and frail, made of grass loosely put together, and sometimes a little sheep's wool is worked in. They are suspended from the extremities of pendant branches of white gum and other trees, often at some elevation above the ground, 12 or 15 feet, or more. The usual clutch of eggs is two, I do not recollect ever finding three. The breeding season is late, from October to end of December. Nov. 15/06. Two fresh eggs. Dec. 23/06. Two fresh eggs."

Whitlock later wrote from West Australia: "This bird first appeared in the white gums a few miles to the north of Mt. Barker. In the Stirling Ranges it frequented the white gums, and, despite the fact of some thousands of acres having been ringbarked around Solomon's Well, the species still clings to the locality. It is a late breeder, and it was not until I had found half a dozen nests of the previous year that I got one with eggs. This was suspended from the foliage of a *Melaleuca* at a height of about ten feet. All the nests I found were very neatly woven of green grass stems, but little else being used in their construction. The eggs are very dark coloured—the shell of a brownish tint—sparsely dotted with chocolate or purplish spots. I observed individuals pairing as late as the beginning of November."

Elliott's notes from Dumbleyung, West Australia, read: "This is one of the commonest birds in this district; it is to be found in timber and scrub country alike. Were it as large as a Magpie it might well be termed the 'bush bully.' Of all the feathered inhabitants of our scrubs, this bird, in my opinion, is the most pugnacious. You will see perhaps two or three picking at the flowers of a small salmon gum, in company with some more of the same tribe, and instantly a battle royal follows for possession of the tree. Many times I have seen the bird fearlessly tackle a Purple-crowned Lorikeet (*Glossopsitta porphyrocephala*) though usually, in this case, the sharp and strong beak of the Lorikeet has driven the smaller bird from some favoured bunch of blossom. The Honey-cater is always ready for fight, and the appearance of any other species is the signal for a set-to. Of all the birds

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which assemble at the common warning call on the appearance of a Hawk, none puts up a fiercer fight than *P. ornata*. Its notes are harsh, and, so far as I can learn, it has three distinct calls. These birds breed from September onwards, though they are somewhat irregular in habits. The nest, composed usually of dry grasses and devoid of lining, is somewhat shallow, considering the size of the eggs. It is placed usually in mallee suckers or some convenient bush from three to six feet above the ground, but I have seen it placed high up in trees. Two years ago I was attracted by two of these Honey-eaters repeatedly flying to a salmon gum stump; the tree had been cut down, and the stump had sprouted. Much to my surprise, there was a nest containing a young Bronze Cuckoo (*Chalcococcyx plagosus*) which the Honey-eaters were assiduously feeding. When I made a second visit to the nest the Cuckoo had grown to such an extent that it was sitting on the rim, the nest being hardly visible. I went a third time, and found that the occupant had completely outgrown its quarters, and was sitting gripping a branch with one foot and the side of the nest with the other. When I returned the bird had flown. This was the first time, either here or in New South Wales, that I had found a Bronze Cuckoo in an open nest."

Gould described this bird from West Australia from the Swan River district, and Alexander has recently recorded that it is "Resident. Plentiful in the tuart belt, chiefly frequenting the tops of the tall tuart trees." Gould later met with it on the belts of the Murray, South Australia, but did not distinguish the forms. However, actual comparison enabled Campbell twenty years ago to write: "I find the birds from Western Australia are larger and lighter in colour compared with those from Victoria," but he also wrote "the Murray belts where Gould procured his types." This latter statement is incorrect as Gould described the species before he went to Australia from specimens sent him from the Swan River Settlement.

When I prepared my "Reference List" in 1912 I separated

Ptilotis ornata ornata (Gould).

West Australia.

Ptilotis ornata munna Mathews.

"Differs from *P. o. ornata* in its pallid coloration above, paler green on the head and especially paler below, almost white on the abdomen. Stirling Ranges, W.A."

West Australia (Stirling Ranges).

Ptilotis ornata tailemi Mathews.

"Differs from *P. o. ornata* in its slightly less size and less green on the head, even paler than *P. o. munna*. Tailem Bend, South Australia."

Victoria, South Australia.

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I later added

Ptilotis ornata wesleydalei.

"Differs from *P. o. ornata* Gould in being much darker above, and in having the yellow ear-patch and the dark stripes on the under-surface much more pronounced. Broome Hill, S.W.A."

Inland districts of South-west Australia.

Ptilotis ornata underbooli.

"Differs from *P. o. tailemi* Mathews in its smaller size, more curved bill, lighter upper- and under-parts and smaller yellow ear-patch. Underbool, Victoria."

Mallee country of Victoria and South Australia.

In my 1913 "List" I referred these to the genus *Lichenostomus* and synonymised *P. o. underbooli* with *P. o. tailemi*, but when I transferred the species to the genus *Sacramela* I admitted the five subspecies.

At the present time it seems best to allow all the five, as Austin has recorded it from Cobbora, a district away from its previously recorded range, and Ashby's recent notes in connection with *P. penicillata* are suggestive of this species also.



H. Gray old. del.

Witherby & Co

SACRAMELA PLUMULA
 (YELLOW FRONTED HONEY EATER)
 PTILOTULA FLAVESCENS
 (YELLOW TINTED HONEY EATER)

SACRAMELA PLUMULA.

PLUMED HONEY-EATER.

(PLATE 539.)

Ptilotis plumulus Gould, Birds Australia, pt. II., March 1st, 1841: York district, West Australia.

Ptilotis plumulus Gould, Birds Austr., pt. II. (Vol. IV., pl. 40), March 1st, 1841; *id.*, Proc. Zool. Soc. (Lond.), 1840, p. 150, July 1841; *id.*, Handb. Birds Austr., Vol. I., p. 516, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 189, 1878; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 245, 1884; Ramsay, Tab. List Austr. Birds, p. 13, 1888; Hall, Key Birds Austr., p. 43, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 407, 1901; North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 137, 1907; Mathews, Handl. Birds Austral., p. 97, 1908; *id.*, Emu, Vol. IX., pp. 14-63, 1909 (N.W.A.); Whitlock, *ib.*, p. 211, 1910 (W.A.); Cleland, *ib.*, p. 225 (Food); S. A. White, *ib.*, Vol. XII., p. 128, 1912 (S.A.); *id.*, *ib.*, Vol. XIII., p. 32, 1913 (S.A.).

Ptilotis planasi Campbell, Emu, Vol. X., pt. III., p. 168, Dec. 1st, 1910: Napier Broome Bay, North-west Australia; Hill, *ib.*, p. 287, 1911.

Ptilotis chrysotis chrysotis Mathews, Nov. Zool., Vol. XVIII., p. 410, Jan. 31st, 1912.
Not *Certhia chrysotis* Latham, Index Ornith. Suppl., p. xxxviii., 1801.

Ptilotis chrysotis plumula Mathews, *ib.*

Ptilotis chrysotis ethelæ Mathews, *ib.*: Port Augusta, South Australia.

Ptilotis chrysotis planasi Mathews, Nov. Zool., Vol. XVIII., p. 411, Jan. 31st, 1912.

Ptilotis chrysotis andersoni Mathews, *ib.*: Mount Anderson, North-west Australia.

Ptilotis chrysotis graingeri Mathews, Austral Avian Record, Vol. I., pt. 4, p. 99, Sept. 18th, 1912: Mount Grainger, South Australia.

Lichenostomus plumulus plumulus Mathews, List Birds Austr., p. 279, 1913.

Lichenostomus plumulus planasi Mathews, *ib.* p. 280; *id.*, South Austr. Orn., Vol. III., p. 225, 1918.

Lichenostomus plumulus andersoni Mathews, List Birds Austr., p. 279, 1913.

Lichenostomus plumulus graingeri Mathews, *ib.*

Lichenostomus plumulus ethelæ Mathews, *ib.*; S. A. White, Trans. Roy. Soc. South Austr., Vol. XXXVIII., p. 436, 1914 (Central Australia); *id.*, Emu, Vol. XIV., p. 191, 1915; *id.*, *ib.*, Vol. XV., p. 161, 1916; Ashby, *ib.*, Vol. XVI., p. 233, 1917; S. A. White, *ib.*, Vol. XVIII., p. 198, 1919.

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Lichenostomus plumulus gracemeri Mathews, Austral Avian Record, Vol. II., pt. 4, p. 77,
Dec. 29th, 1913: Gracemere, Queensland.

Sacramela plumula Mathews, Austral Avian Record, Vol. II., p. 112, 1914.

Sacramela plumula plumula Mathews, *ib.*

Sacramela plumula planasi Mathews, *ib.*

Sacramela plumula andersoni Mathews, *ib.*

Sacramela plumula graingeri Mathews, *ib.*

Sacramela plumula gracemeri Mathews, *ib.*

Sacramela plumula ethelæ Mathews, *ib.*

Meliphaga plumula McGilp, Emu, Vol. XXII., p. 286, 1923; Whitlock, *ib.*, Vol. XXIII.,
p. 277, 1924.

DISTRIBUTION. Interior of Australia, ranging on the north-east to Gracemere, Queensland, and on the north-west to Napier Broome Bay, and along the south from east to west.

Adult male. Fore-head and crown pale olive-yellow; mantle, back, rump, scapulars and wing-coverts light ash-colour, slightly tinged with olive; upper tail-coverts olive-yellow; tail-feathers ash-brown, margined on the outer web with greenish-yellow and slightly margined on the inner web with whitish, all the feathers narrowly tipped with white; primaries and outermost secondaries ash-brown with the outer web greenish-yellow, and the inner web widely margined with whitish; innermost secondaries like the mantle in colour; feathers in front of the eye dusky; ear-coverts bordered behind by dusky-black; sides of the neck ornamented by a tuft of silky golden-yellow feathers; throat whitish, very indistinctly streaked with ash-colour; remainder of the under-parts yellowish-white, tinged especially on the chest with pale lemon-yellow; under wing-coverts and axillaries light fawn-colour. Eyes brown, feet and tarsus leaden-brown, bill black. Total length 157 mm.; culmen 13, wing 78, tail 64, tarsus 22. Figured. Collected on Mt. Anderson, West Kimberley, North-west Australia, on the 12th of July, 1911, and is the type of *P. c. andersoni*,

Adult female. Feathers of the top of the head and ear-coverts yellowish-green; back of the neck, mantle, rump, upper tail-coverts, wing-coverts and scapulars greyish-green; tail-feathers ash-brown, margined on the outer webs with yellowish-olive; primaries and secondaries blackish-brown, with the outer webs olive-yellow towards the base and whitish towards the tip; innermost secondaries greyish-olive; lores blackish; ear-coverts bordered below by blackish; a tuft of golden-yellow plumes below the ear-coverts; chin whitish tinged with yellow; chest, breast and sides of the body olive-yellow indistinctly streaked with dusky; middle of the belly and under tail-coverts pale yellow. Eyes white. Total length 150 mm.; culmen 11, wing 79, tail 66, tarsus 21. Figured. Collected on Mt. Grainger, South Australia (between Petersburg and Broken Hill), on the 11th of September, 1911, and is the type of *P. c. graingeri*.

The sexes are alike.

Immature. Top of head dull olive-yellow; lores and spot in front of the eye blackish; sides of face similar; ear-coverts lemon-yellow; hind-neck, back, rump, upper tail-coverts, scapulars, and upper wing-coverts rufous-brown; primary-coverts and flight-quills dark brown fringed with yellowish-green on the outer webs, becoming paler and inclining to white at the tips of the latter—the inner webs of the latter whitish; tail yellowish-green, pale brown on the inner webs; chin and

PLUMED HONEY-EATER.

throat pale yellow ; fore-neck, breast, abdomen, and sides of body greyish-white ; vent, under tail-coverts, and under wing-coverts pale buff ; under-surface of flight-quills hair-brown with pale margins ; lower aspect of tail yellowish bronze-brown. Collected at Carnamah, West Australia, in October, 1904.

Eggs. Two eggs usually form the clutch. A clutch of two eggs taken at Balah Station, Morgan, South Australia, on the 31st of July, 1909, is of a beautiful salmon-colour, marked at the larger ends with minute spots (forming an irregular zone) of very pale reddish-brown. Ovals in shape ; surface of shell smooth and rather glossy. 20 by 14 mm.

Nest. A small cup-shaped structure, composed chiefly of dry grasses, etc., and placed in a small bush close to the ground.

Breeding-months. August to end December (January).

THIS is apparently one of Gilbert's discoveries, though his name is not mentioned by Gould who wrote : " All the specimens I have seen were collected in the district of York, about 60 miles eastward of Swan River, where it inhabits the white-gum forests, resorting to the tops of the highest trees, and is seldom to be seen on the ground. Its note is much varied, consisting of a loud shrill whistle, somewhat resembling the sportsman's pea-whistle, continued without intermission for a great length of time. When disturbed it flits among the branches with a quick darting flight, while at other times it soars from tree to tree with the most graceful and easy movement. The breeding-season continues from October to January. The stomach is diminutive and slightly muscular, the food consisting of insects and honey."

Captain S. A. White has written me : " This bird has a great range over South Australia, but it is really a dry-country bird, being most numerous in that country which has a light rainfall. I found it abundantly in some of the driest districts of the interior."

Mr. J. W. Mellor's notes read : " These Honey-eaters keep to the high ranges rather than the flat country ; I have never seen them in the open Mallee country. In the Flinders Ranges between Port Pirie and Port Augusta I have noted them fairly numerous in the deep ravines where large eucalyptus trees grow, and there they suck the honey from the flowers and eat a certain amount of insect life. They reminded me of the White-plumed Honey-eater in their habits and their mode of flight, and also in their notes. They are curious birds, ever on the alert to find out anything new, and make a harsh squeaking note oft repeated, warning other birds of danger about, and will often call their mates and a little *posse* will congregate to discuss matters, making a regular chorus of squeaking notes. While visiting the Flinders Range in August, 1912, negotiating the Port Germein Pass, I had an opportunity of studying their habits. The country is very picturesque, as the stream

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crosses the track about forty times in a mile and a half, and here where the big gums grow these birds were numerous and every now and then they would dart down and dip into the water for a bath, then shake themselves partially dry and fly to some convenient twig and plume their feathers in the bright sunshine. I shot one for identification, and another bird, curious to know what was the matter with its mate, came hopping down on to the lowest branches of an overhanging tree, all the time twittering and making a harsh screeching note; this called several more until there was almost a dozen peering at the dead bird; then they hopped down to the bird and began plucking at the feathers, all the time twittering and clattering as they attacked it. The time of breeding starts in September and ends in November or early in December."

From the East Murehison, Mid-west Australia, Whitlock noted: "A very small colony on the big spinifex plain to west of Bore Well. I was greatly surprised to find them so far north and so far inland. They were extremely local, and I could make nothing out regarding their nesting. I shot several specimens for dissection, and none showed signs of immediate breeding. It is possible that they may have bred during the summer rains, or perhaps some time after I left Bore Well. On my return in mid-November I shot a fully-fledged nestling which was being fed by its parents. This was the only evidence of their breeding I encountered."

In connection with the birds of the Flinders Ranges, Captain S. A. White has recorded: "Their flight was swift but irregular—a series of spasmodic darts," and later added: "Mr. Mathews has made this bird from the Flinders and Gawler Ranges a new subspecies. I agree with him. We met with these birds on many occasions in the ranges. They are very silent birds, and unlike many other members (I may say nearly all) of the genus in their quiet, silent and retiring habits. They seem sociable, and were often observed in parties of from eight to ten. They apparently keep to the ranges, never once were they seen in the mallee or away from the hilly country."

Ashby has noted from the Flinders Range: "These were very numerous in and near the entrance of the Gorge, but when the upper part of the Gorge was reached and a higher altitude attained the species were replaced by *P. penicillata rosinae* Mat."

G. F. Hill from the Kimberley District, North-west Australia, wrote: "I shot two of these birds on 7/5/10 in the sandstone plateau country, 5 miles north-east of the station, which proved on examination to be males (type and co-type specimens of *P. planasi* Campbell). Subsequent visits were paid to this locality without success, but in June, when passing through similar country 10 miles south-east of the station, I saw many pairs, and one nest from which the young

PLUMED HONEY-EATER.

had recently flown. In their habits they resemble *P. sonora* somewhat, though they are easily distinguished, even at a distance, from the commoner species."

When Campbell named this new species he wrote: "is closely allied to *P. plumula*, but has the back, wing-coverts, and tail-coverts greyish instead of greenish; has the patches of yellow on the sides of the neck larger, and the under-surface more pronouncedly mottled."

In my "Reference List" I accepted for this species *Certhia chrysotis* Latham, but in 1913 I rejected this name writing, "*Certhia chrysotis* Latham. This name is based on Watling's Plate 117. Gray identified this as *P. fusca* Gould. Sharpe connected Watling's Plate 115 with this name, but the description does not agree. Sharpe's conclusion regarding Plate 117 was that it might have been drawn from a specimen of *Ptilotis fusca* in worn plumage. I recognized in it the Eastern representative of Gould's *P. plumulus*, but on account of the indefiniteness of the drawing, and the many attempts to fix the name, I would now discard it as indeterminable."

In view of this conclusion it seems necessary to reproduce Latham's description which I here give.

"Yellow-eared Cr(ecper). Size of a *Hedge Sparrow*; length six inches; bill and legs black; tongue bristly; irides dirty pale red; the plumage on the upper parts of the body pale dirty brown, beneath white; below the ear an oval spot of a fine yellow colour, and above it a smaller one of black. Inhabits *New South Wales*."

Accepting the above name I arranged the species in 1912 thus:

• *Ptilotis chrysotis chrysotis* (Latham).

New South Wales.

Ptilotis chrysotis plumula Gould.

West Australia.

Ptilotis chrysotis ethelæ Mathews.

"Differs from *P. c. chrysotis* in its darker coloration above and below, especially on throat and breast, and its having a black line of feathers over the yellow ear-patch. Port Augusta, South Australia."

South Australia.

Ptilotis chrysotis planasi Campbell.

North-west Australia.

Ptilotis chrysotis andersoni Mathews.

"Differs from *P. c. planasi* in its longer and stouter bill, and in being paler above and less yellow below. Mount Anderson, N.W.A."

Interior of North-west Australia.

I then added

Ptilotis chrysotis graingeri.

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“ Differs from *P. c. ethelæ* in its more slender bill, and in having less yellow on the throat, and the black feathers above the ear-patch narrow. Mt. Grainger, South Australia.”

Adjoining parts of New South Wales and
South Australia.

In my 1913 “ List ” as above noted I rejected the name *chrysotis* and reverted to Gould’s *plumulus*, and placed the species in the genus *Lichenostomus*, admitting five subspecies :

Lichenostomus plumulus plumulus (Gould).

South-west Australia.

Lichenostomus plumulus planasi (Campbell).

North-west Australia.

Lichenostomus plumulus andersoni (Mathews).

Interior of North-west Australia.

Lichenostomus plumulus graingeri (Mathews).

Adjoining parts of New South Wales,
Victoria, and South Australia.

Lichenostomus plumulus ethelæ (Mathews).

South Australia.

I have since added

Lichenostomus plumulus gracemeri.

“ Differs from *L. p. graingeri* in being lighter and smaller, and in having the black on the ear-coverts more extensive. Gracemere, Queensland.”

Queensland and Northern Territory.

I now refer the species to the genus *Sacramela* with the above six subspecies, thus :

Sacramela plumula plumula (Gould).

Sacramela plumula planasi (Campbell).

Sacramela plumula andersoni (Mathews).

Sacramela plumula graingeri (Mathews).

Sacramela plumula ethelæ (Mathews).

Sacramela plumula gracemeri (Mathews).

GENUS—PTILOTULA.

PTILOTULA Mathews, Nov. Zool., Vol. XVIII.,

p. 414, Jan. 31st, 1912. Type (by mono-

typy) *Ptilotis flavescens* Gould.

As above noted it is possible that the previous genus may be amalgamated later with this one, but I have noted apparent differences in the tongues in dried specimens which need investigation, and though the species are very alike, I note that the hind-toe is shorter and is exceeded by the middle toe in length, whereas in all the preceding forms the hind-toe is longest.

The bill is shorter than the head and similarly formed to that of the preceding genus.

The wing is long, the first primary short, less than half the length of the second, which is long and equal to the seventh, and a little shorter than the third, fourth, fifth and sixth, which are subequal and longest. The tail is long and square. The legs are comparatively long and slender, the feet small.

NOTE.—The species *Ptilotis albineata* White (p. 457) shows sufficient differences to warrant it being placed in a subgenus *TERRITORNIS albineata*.

Order PASSERIFORMES.

No. 681.

Family MELITHREPTIDÆ.

PTILOTLULA FLAVESCENS.

YELLOW-TINTED HONEY-EATER.

(PLATE 539.)

PTILOTLIS FLAVESCENS Gould, Proc. Zool. Soc. (Lond.), 1839, p. 144, March 1840 : North-west Coast Australia.

Ptilotis flavescens Gould, Proc. Zool. Soc. (Lond.), 1839, p. 144, 1840; *id.*, Birds Austr., pt. xv. (Vol. IV., pl. 41), Sept. 1st, 1845; *id.*, Handb. Birds Austr., Vol. I., p. 517, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 189, 1878; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 245, 1884; Ramsay, Proc. Linn. Soc. N.S.W., 2nd Ser., Vol. I., p. 1092, 1887; *id.*, Tab. List Austr. Birds, p. 13, 1888; Hall, Key Birds Austr., p. 43, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 408, 1901; Hall, Emu, Vol. I., p. 100, 1902 (N.W.A.); North, Austr. Mus. Spec. Cat., No. 1. Vol. II., p. 128, 1907; Mathews, Handl. Birds Austral., p. 97, 1908; *id.*, Emu, Vol. IX., p. 15, 1909 (N.W.A.); Hill, *ib.*, Vol. X., p. 286, 1911 (N.W.A.); *id.*, *ib.*, Vol. XII., p. 260, 1913 (Central Australia); Macgillivray, *ib.*, Vol. XIII., p. 178, 1914 (Q.); Barnard, *ib.*, Vol. XIV., p. 49, 1914 (N.T.).

Ptilotis flavescens flavescens Mathews, Nov. Zool., Vol. XVIII., p. 411, Jan. 31st, 1912.

Ptilotis flavescens wyndhami Mathews, *ib.* : Wyndham, North-west Australia.

Ptilotis flavescens subgermana Mathews, *ib.* : Cairns, North Queensland.

Ptilotis flavescens melvillensis Mathews, Austral Avian Record, Vol. I., pt. 2, p. 50, Apl. 2nd, 1912 : Melville Island.

Ptilotula flavescens flavescens Mathews, List Birds Austr., p. 280, 1913; *id.*, South Austr. Ornith., Vol. III., p. 225, 1918.

Ptilotula flavescens wyndhami Mathews, List Birds Austr., p. 280, 1913.

Ptilotula flavescens melvillensis Mathews, *ib.*

Ptilotula flavescens subgermana Mathews, *ib.*; *id.*, South Austr. Orn., Vol. II., p. 60, 1915.

Ptilotula flavescens zanda Mathews, Austral Avian Record, Vol. II., pt. 4, p. 77, Dec. 29th, 1913 : Normanton, Gulf of Carpentaria.

DISTRIBUTION. Northern Tropical Australia, from Derby in the north-west to Cairns, Queensland, but not in Cape York Peninsula.

Adult male. Feathers of the lores, sides of the face and fore-head pale yellow, shaded with grey; back of the head, neck, mantle, lower back, rump and wing-coverts dull smoky-grey; upper tail-coverts grey washed with buff; tail olive-brown, margined

YELLOW-TINTED HONEY-EATER.

on the outer web with olive-yellow, narrowly margined on the inner web with whitish, and all the feathers except the middle pair tipped with white; primaries and secondaries olive-brown, with the outer web towards the base olive-green and whitish towards the tip; ear-coverts dull yellow bordered below by blackish-brown; a tuft of golden-yellow feathers on the sides of the neck, chin and throat; chin and throat pale yellow, remainder of the under-surface of the body whitish-yellow with a few indistinct grey streaks on the chest and breast; under wing-coverts and axillaries pale buff. Eyes grey, feet lavender, bill black. Total length 145 mm.; culmen 10, wing 77, tail 64, tarsus 19. Figured. Collected at Normanton, Gulf of Carpentaria, North Queensland, on the 30th of April, 1914.

The sexes are alike.

Adult male. Lores, fore-head and crown dull olive-yellow; back of the neck, mantle, back, rump, upper tail-coverts, scapulars and wing-coverts dull brownish-olive, washed on the upper tail-coverts with olive-yellow; tail olive-brown, margined on the outer web with bright olive-yellow and on the inner web and at the tip with whitish; primaries olive-brown with the outer web bright olive-yellow; secondaries ash-brown widely margined on the outer web with olive-yellow; ear-coverts olive-yellow bordered below with black and with a tuft of golden-yellow plumes on the sides of the neck; chin and throat uniform bright yellow; chest and sides of the body bright yellow with indistinct streaks of dull brownish-grey; middle of the abdomen and under tail-coverts bright yellow; under wing-coverts, axillaries and quill-lining fulvous-buff. Eyes brown, feet and tarsus pale leaden-brown, bill brown, lower base yellow. Total length 158 mm.; culmen 12, wing 78, tail 66, tarsus 20. Figured. Collected on Melville Island, Northern Territory, on the 24th of October, 1911, and is the type of *P. f. melvillensis*. (Bottom figure.)

Nearly adult male. Crown of head and nape dull yellow; hind-neck, sides of neck, back, rump, and upper tail-coverts fawn-colour like the scapulars and lesser upper wing-coverts; the greater series, bastard-wing, and outer aspect of flight-quills yellowish-green, the inner-webs of the last dark brown margined with buff; tail pale brown fringed with yellowish-green; lores and sides of face, and ear-coverts bright pale yellow, some dark feathers immediately behind the ear-coverts; throat white; fore-neck, breast, sides of breast, abdomen, sides of body, thighs, and under tail-coverts pale yellow; axillaries and under wing-coverts buffy-white; under-surface of flight-quills dark brown margined with buff; lower aspect of tail dark brown with yellow margins to the feathers. Eyes grey, feet lavender, bill yellow. Wing 75. Collected at Normanton, Gulf of Carpentaria, on the 16th of May, 1914.

Immature female. Top of head, nape, hind-neck, and sides of neck dull yellow; back and upper tail-coverts ochreous like the scapulars and lesser and median upper wing-coverts; the greater series and flight-quills yellow, inner-webs of the last hair-brown margined with yellow; tail pale yellowish-brown; eye region, sides of face, chin, and throat bright yellow; ear-coverts pale brown; fore-neck, breast, abdomen, sides of body, and under tail-coverts pale lemon-yellow; marginal under wing-coverts yellowish-buff; under-surface of flight-quills dark brown with buff margins; lower aspect of tail pale yellow. North-west Australia on the 1st of June, 1901.

Nest. The three following nests were collected at Derby, West Kimberley, North-west Australia :—

December 4th, 1910. Two in full clutch, one broken. Tree, paperbark. Height from the ground 15 feet. Nest was suspended from a thin branch. Was loosely constructed of thin strips of paperbark, rootlets and pieces of cocoons, the whole being lightly fastened together with cobwebs and fastened to the branches

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with the same materials. Was lined with a little sheeps' wool. Dimensions : outside, $2\frac{1}{4}$ by $2\frac{1}{8}$ by $1\frac{7}{8}$ in. deep ; inside, $1\frac{3}{4}$ by $1\frac{1}{2}$ by $1\frac{1}{4}$ deep.

December 10th, 1910. Full clutch two eggs (one broken). Tree, paperbark. Height from ground 7 feet. Nest was placed in a horizontal fork. Materials : strips of paperbark, a few rootlets and cobwebs. Lined with rootlets. Nest was fastened together with cobwebs and to the tree with the same materials. Dimensions : outside, $2\frac{5}{8}$ by $2\frac{5}{8}$ by 1 in. deep ; inside, $1\frac{1}{2}$ by $1\frac{1}{2}$ by $\frac{1}{2}$ in. deep.

December 4th, 1910. Two in full clutch were partly incubated. Tree, paperbark. Height from ground 10 feet. Nest was placed in the fork of a fine twig growing out of the side of a horizontal limb. Was built of strips of soft paperbark, horsehair, pieces of silk-like cocoons and sheeps' wool and lined with wool. Was loosely fastened to the tree with cobwebs and frayed out cocoons. Dimensions : outside, $2\frac{1}{4}$ by $1\frac{3}{4}$ by $1\frac{5}{8}$ in. deep ; inside, $1\frac{3}{8}$ by $1\frac{1}{4}$ by 1 in. deep.

Eggs. Two eggs form the clutch, though often only one egg is met with. A clutch of two eggs taken at Napier Broome Bay, North-west Australia, on the 18th of May, 1910, is of a beautiful pale salmon-pink ground-colour, minutely spotted with very dark reddish-brown, and pale markings of purplish-grey. Swollen ovals in shape. Surface of shell smooth and rather glossy. 17-18 by 13 mm.

Nest. A small cup-shaped structure, composed of fine grass stems and pieces of bark, and a large quantity of spiders' webs over the outside, and lined with rootlets. Dimensions over all : $2\frac{1}{2}$ inches across by nearly 2 inches in depth. Built near the ground in a small tree or bush.

Breeding-months. July to end November. The breeding season is influenced by the rains.

WHEN Gould described this species he acknowledged that "nothing whatever is at present known of its habits or economy."

Mr. J. P. Rogers wrote me : "At Marngle Creek this species was numerous among flowering trees. At Mungi its place is taken by another Honey-eater with a grey crown to the head (*keartlandi*). For a distance of thirty miles up the Jegurra Creek *P. flavescens* was numerous ; from there onward I saw few, but there were not many trees in flower after passing the thirty-mile hut on this creek. Is a common species in West Kimberley and is a partial migrant for food, I think, as it always appears in larger numbers where many trees are in bloom," and from Melville Island he wrote : "This species is one of the commonest birds on the island and is usually found in open forest, but also frequents the outer edge of the mangroves. Jan. 13, '12. This species was not very numerous on the north side of the island."

Hill simply recorded from Kimberley : "A very common bird in all scrubby and timbered country," and from Borrooloola : "A fairly common species."

Macgillivray wrote : "Common in the Gulf country, but not seen at Cape York. One pair was found building a nest at Sedan, on the Cloncurry, on 8th March, 1910, but deserted it after completion. Another nest containing

YELLOW-TINTED HONEY-EATER.

small young birds was found at Byromine on the 9th April; one on the Gregory River road on the 17th July, containing one egg; and a fourth building near Burketown on the 23rd July. Male taken on 21st February--irides dark brown, bill blackish-brown, legs olive-brown. Stomach contents, bronze-green ants and small beetles."

Barnard has recorded: "A *Ptilotis* closely resembling *P. flavescens* was very common on the McArthur, and a number of nests was found. In no instance did the nests contain more than a single egg or young bird."

Keartland met with this species on the Fitzroy River and observed: "During the warm days of December and January these birds came to the water trough in such numbers to drink and bathe as to completely line the trough. They seem to be exactly similar in habits to the *P. penicillata* (White-plumed Honey-eater), spending their time bathing, chasing each other, and seeking insects or pollen from the blossom amongst the eucalypt foliage. The sexes are alike in plumage, and can only be distinguished by dissection. They were just building their nests when we left the locality in March."

This Northern species I separated in 1912 into three subspecies:

Ptilotis flavescens flavescens Gould.

North-west Australia (Derby).

Ptilotis flavescens wyndhami Mathews.

"Differs from *P. f. flavescens* in its paler coloration, the yellow on the head only indicated, more uniform upper-surface, and obscurely striped under-surface. Wyndham, North-west Australia."

North-west Australia, Northern Territory.

Ptilotis flavescens subgermana Mathews.

"A dullish brown-coloured bird above, like *P. f. flavescens*, but with no green whatever, and instead of yellow is uniformly grey with stripings very obscurely indicated; brown ear-stripe followed by tinge of yellow only, and preceded by greenish. Cairns, Queensland."

North Queensland.

I then added

Ptilotis flavescens melvillensis.

"Differs from *P. f. wyndhami* in its heavier bill and darker upper-surface. It is also darker and larger than *P. f. flavescens*. Melville Island, Northern Territory."

and with transference to the genus *Ptilotula* admitted these in my 1913 "List." I have since introduced

Ptilotula flavescens zanda.

"Differs from *P. f. melvillensis* Mathews in being less striped on the chest, and lighter in colour and build. Normanton, Gulf of Carpentaria."

Order PASSERIFORMES.

Family MELITHREPTIDÆ.

No. 682.

PTILOTULA PENICILLATA.

WHITE-PLUMED HONEY-EATER.

(PLATE 540.)

MELIPHAGA PENICILLATA Gould, Synops. Birds Austr., pt. I., pl. (15), April 1st, 1837 :
Interior of New South Wales.

Meliphaga penicillata Gould, Synops. Birds Austr., pt. I., pl. (15), April 1st, 1837; *id.*,
Proc. Zool. Soc. (Lond.), 1836, p. 143, Dec. 1837; Ashby, Emu, Vol. XXI., p. 208,
1922 (Review); Russell, *ib.* Vol. XXI., p. 142, 1921 (Vic.); McGilp, *ib.*, Vol.
XXII., p. 286, 1923; Whitlock, *ib.*, Vol. XXIII., p. 277, 1924.

Ptilotis penicillata Gould, Birds Austr., pt. XVIII. (Vol. IV., pl. 43), March 1st, 1845; *id.*,
Handb. Birds Austr., Vol. I., p. 519, 1865; Ramsay, Proc. Zool. Soc. (Lond.), 1875,
p. 596, 1876 (Q.); *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 189, 1878; Gadow, Cat.
Birds Brit. Mus., Vol. IX., p. 244, 1884; Ramsay, Tab. List Austr. Birds, p. 13,
1888; Hall, Key Birds Austr., p. 42, 1899; Campbell, Nests and Eggs Austr. Birds,
Vol. I., p. 403, 1901; D'Ombraïn, Emu, Vol. V., p. 83, 1905 (Vic.); Cleland, *ib.*,
p. 190, 1906 (S.A.); *id.*, *ib.*, p. 207 (Kangaroo Island); North, Austr. Mus. Spec.
Cat., No. 1, Vol. II., p. 131, 1907; Batey, Emu, Vol. VII., p. 9, 1907 (Vic.); Hill,
ib., p. 19 (Vic.); Austin, *ib.*, p. 30 (N.S.W.); Mathews, Handl. Birds Austral.,
p. 97, 1908; Dove, Emu, Vol. VIII., p. 70, 1908 (Vic.); Cleland, *ib.*, Vol. IX.,
p. 225, 1910 (Food); Macgillivray, *ib.*, Vol. X., pp. 17-22, 1910 (N.S.W.);
Cleland, *ib.*, Vol. XII., p. 17, 1912 (Food); Austin, *ib.*, p. 41-42 (N.S.W.); S. A.
White, *ib.*, p. 127, 1912 (S.A.); Chandler, *ib.*, Vol. XIII., p. 43, 1913 (Vic.); S. A.
White, *ib.*, p. 128, 1914 (S.A.); Cleland, *ib.*, p. 131 (S.A.); Purnell, *ib.*, Vol. XV.,
p. 44, 1915 (Vic.); Cleland, *ib.*, Vol. XVIII., p. 282, 1919 (N.S.W.); Kersey, *ib.*,
Vol. XIX., p. 52, 1919.

Ptilotis leilavalensis North, Records Austr. Mus., Vol. III., No. V., p. 106, April 17th,
1899; Burke District, Queensland; Hall, Key Birds Austr., p. 43, 1899; Campbell,
Nests and Eggs Austr. Birds, Vol. I., p. 405, 1901; Hall, Emu, Vol. I., p. 99, 1902
(N.W.A.); Milligan, *ib.*, Vol. IV., p. 51, 1904 (W.A.); North, Austr. Mus. Spec.
Cat., No. 1, Vol. II., p. 133, 1907; Mathews, Handl. Birds Austral., p. 97, 1908;
Macgillivray, Emu, Vol. XIII., p. 179, 1914 (Q.).

Ptilotis carteri Campbell, Victorian Naturalist, Vol. XVI., No. 1, p. 3, May 1st, 1899 :
North-west Cape, Mid-west Australia; Carter, *ib.*, Vol. III., p. 92, 1903 (M.W.A.);
id., *ib.*, p. 248, pl. xvi., 1904; Milligan, *ib.*, Vol. IV., p. 51, 1904; *id.*, *ib.*, pp. 152-3,



H Gronvold. del.

Witherby & Co

PTILOTULA PENICILLATA
(WHITE-PLUMED HONEY-EATER)

WHITE-PLUMED HONEY-EATER.

1905 (W.A.) ; Mathews, Handl. Birds Austral., p. 97, 1908 ; Cleland, Emu, Vol. VIII., p. 155, 1909 (W.A.) ; Whitlock, *ib.*, p. 184 (W.A.) ; *id.*, *ib.*, Vol. IX., p. 211, 1910 (W.A.) ; Orton and Sandland, *ib.*, Vol. XIII., p. 80, 1913 (W.A.) ; Campbell, *ib.*, Vol. XVIII., p. 5, 1918.

Ptilotis penicillata penicillata Mathews, Nov. Zool., Vol. XVIII., p. 412, Jan. 31st, 1912.

Ptilotis penicillata mellori Mathews, *ib.* : Templestowe, Victoria ; *id.*, Austral Av. Rec., Vol. I., p. 62, 1912.

Ptilotis penicillata whitei Mathews, *ib.* : Murray Flats, South Australia.

Ptilotis penicillata rosinae Mathews, *ib.* : Port Augusta, South Australia ; Ashby, Emu, Vol. XVI., p. 233, 1917.

Ptilotis penicillata leilavalensis Mathews, Nov. Zool., Vol. XVIII., p. 412, 1912 ; S. A. White, Emu, Vol. XIV., p. 191, 1915 (Central Australia) ; *id.*, *ib.*, Vol. XV., p. 161, 1916.

Ptilotis penicillata carteri Mathews, Nov. Zool., Vol. XVIII., p. 412, 1912.

Ptilotis penicillata ladasi Mathews, *ib.*, p. 413, Jan. 31st, 1912 : East Murchison, West Australia.

Ptilotis penicillata calconi Mathews, *ib.* : Mungi, North-west Australia.

Ptilotis whitei S. A. White, Emu, Vol. XII., p. 180, 1913 (S.A.).

Ptilotula penicillata penicillata Mathews, List Birds Austr., p. 281, 1913.

Ptilotula penicillata leilavalensis Mathews, *ib.*

Ptilotula penicillata mellori Mathews, *ib.* ; Belcher, Birds Geelong, p. 343, 1914.

Ptilotula penicillata whitei Mathews, List Birds Austr., p. 281, 1913.

Ptilotula penicillata rosinae Mathews, *ib.*

Ptilotula penicillata ladasi Mathews, *ib.*

Ptilotula penicillata carteri Mathews, *ib.*

Ptilotula penicillata calconi Mathews, *ib.*

Ptilotis geraldtonensis Ashby, Emu, Vol. XX., pt. III., p. 136-190, Jan. 13th, 1921 : Geraldton, West Australia ; Mellor, *ib.*, p. 139 ; Carter, *ib.*, Vol. XXI., p. 55, 1921.

Ptilotis penicillata centralia Mathews, Austral Av. Rec., Vol. V., pts. 2-3, p. 37, Feb. 21st, 1913 : Central Australia.

DISTRIBUTION. Interior of Australia generally, reaching coast at North-west Cape and Geraldton, West Australia, and Port Augusta, South Australia.

Adult male. Feathers of the lores and cheeks olive-yellow ; fore-head and top of the head dull yellowish-olive ; mantle, back, rump, scapulars and wing-coverts dull olive ; upper tail-coverts yellowish-olive ; middle pair of tail-feathers olive-green ; remainder of the tail-feathers ash-brown with the outer webs olive-green ; primaries and outer secondaries brownish-black, the outer webs basally margined with greenish-yellow and terminally with greyish-white ; innermost secondaries dull olive, broadly margined on the outer web with greenish-yellow ; sides of the neck ornamented with a patch of silvery-white feathers ; throat and fore-neck ash-grey washed with yellowish-olive ; fore-neck, chest and sides of body olive-grey ; middle of the belly, abdomen and under tail-coverts yellowish-grey ; axillaries pale yellow. Eyes brown, feet grey, bill black. Total length 173 mm. ; culmen 10, wing 81, tail 75, tarsus 22. Figured. Collected at Templestowe, Victoria, on the 10th of June, 1901, and is the type of *P. p. mellori*. (Bottom figure.)

The sexes are alike.

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Adult male. Lores, feathers above the eye, cheeks and ear-coverts deep yellowish-olive; fore-head and crown olive-grey; back of the neck, mantle, scapulars and wing-coverts dull olive-grey; upper tail-coverts yellowish-olive; middle tail-feathers olive-yellow; outer tail-feathers ash-brown, margined on the outer web with dull olive-yellow; primaries and outermost secondaries ash-brown, with the outer webs for the basal two-thirds olive-yellow, and the terminal part greyish-white and broadly margined on the inner web, towards the base, with greyish-white; innermost secondaries dull olive-grey like the back; sides of the neck ornamented with a patch of silvery-white feathers; chin, throat and chest grey, washed with lemon-yellow; remainder of the under-surface of the body yellowish-white; axillaries and under wing-coverts pale buff. Eyes brown, feet and legs pale yellow, bill black. Total length 158 mm.; culmen 11, wing 83, tail 72, tarsus 22. Figured. Collected in the Flinders Range, N.E. of Port Augusta, South Australia, and is the type of *P. p. rosinae*. (Middle figure.)

Adult male. Feathers of the fore-head, lores, a broad line over the eyes, sides of face and ear-coverts pale golden-yellow; crown of the head washed with olive; back of the neck, mantle, lower back and wing-coverts yellowish-buff; rump and upper tail-coverts olive-yellow; middle tail-feathers olive-yellow; outer tail-feathers ash-brown with the outer webs olive-yellow, all the feathers tipped with whitish; primaries and outermost secondaries ash-brown, margined on the outer web, towards the base, with olive-yellow and with white; innermost secondaries similar to the mantle in colour; a small patch of blackish-brown below the ear-coverts and a tuft of silvery-white plumes on the sides of the neck; throat and fore-neck golden-yellow with the white bases of the feathers showing through; remainder of the under-surface of the body yellowish-white, brightest on the chest and under tail-coverts; under wing-coverts yellow, mixed with pale buff; axillaries yellow. Eyes brown, feet and tarsus pale fleshy-brown, bill black. Total length 152 mm.; culmen 11, wing 78, tail 87, tarsus 24. Figured. Collected 14 miles N.W. of Mt. Alexander, West Kimberley, N.W.A., on the 12th of June, 1911. (Top figure.)

Immature male. Top of head, cheeks, chin and throat dull yellow; eye-ring white; ear-coverts lemon-yellow; hind-neck, sides of neck, mantle, back, upper tail-coverts, and scapulars pale clay-brown; upper wing-coverts and outer webs of flight-quills greenish-yellow, inner webs of the last dark brown; tail also greenish-yellow, pale brown on the inner webs; fore-neck, breast, and sides of breast grey tinged with yellow; abdomen, lower flanks, and under tail-coverts whitish-yellow; axillaries and under wing-coverts buffy-white; under-surface of flight-quills hair-brown with pale margins; lower aspect of tail hair-brown with a yellowish tinge. Collected at Box Hill, Victoria, on the 25th of December, 1900.

Young. Fore-part of head dull yellow; sides of face and throat bright yellow; hinder crown, nape, hind-neck, sides of neck, back, upper tail-coverts, and scapulars clay-brown; outer aspect of wings greenish-yellow; inner webs of flight-quills hair-brown margined with buffy-white; tail yellow; fore-neck and breast pale grey tinged with yellow; abdomen, sides of body, thighs, and under tail-coverts pale yellow; axillaries and under wing-coverts pale buff like the margins of the flight-quills below, remainder of quill-lining hair-brown; lower aspect of tail similar to its upper-surface but not so bright. Collected at Ebano, West Australia, in October, 1904.

Female (juvenile). Top of head and sides of face, wings and tail yellowish-green; eye-ring white; back, rump, scapulars, and lesser upper wing-coverts pale umber-brown; chin and throat paler than the top of the head; outer webs of flight-quills whitish; fore-neck and breast dull olive, becoming paler and inclining to yellow on the abdomen and sides of body; thighs ochreous-brown; under-surface of

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flight-quills dark brown with pale edgings. Eyes dull grey, feet fleshy-pink, bill light fleshy-brown. Collected at Auburn, Victoria, on the 13th of September, 1910.

Nest. Cup-shaped, suspended by the rims from a twig. Composed of grass and fine rootlets; on the outside a number of spiders' cocoons, which are sometimes green. Scantily lined sometimes with very fine rootlets, at others with wool. Outside measurements, 2 inches to $2\frac{1}{2}$ deep by 3 to 4 inches wide; inside, $1\frac{1}{4}$ to $1\frac{1}{2}$ inches deep by about $2\frac{1}{2}$ inches wide (four nests). The eggs are visible through the bottom (*penicillata*).

Cup-shaped, situated in the fork of a small twig. Composed of rootlets which hold together the woolly substance forming the sides. No particular lining. Outside measurements, $1\frac{1}{2}$ inches deep by 3 wide; inside, $1\frac{1}{4}$ deep by $1\frac{3}{4}$ wide (*carteri*).

Collected by Dr. Cleland on the Strelly River, Mid-west Australia. Situated in an acacia tree. Nest constructed of fine rootlets interwoven with wool and fluffy grass heads. Lined at the bottom with wool. Suspended from a fork. Inside measurements, $1\frac{3}{4}$ inches by 1 (*carteri*).

Collected at Blackwood, South Australia, by Dr. Morgan. Begun to build October 9th, 1908; finished October 31st, 1908. Two fresh eggs taken November 7th, 1908; built in overhanging branch of small gum 7 feet from the ground. Cup-shaped, constructed of grass, etc., interwoven with spider-webs and lined with soft material. Sides convex. Inside measurements, $2\frac{1}{2}$ inches by 2.

Eggs. Three eggs usually form the clutch. A clutch of three eggs taken at Belltrees, Upper Hunter River, New South Wales, on the 29th of September, 1907, is of a delicate pinkish-white ground-colour, spotted with small markings of reddish-brown, pinkish-brown, and purplish-grey, becoming more numerous about the larger ends. Ovals in shape, surface of shell smooth and slightly glossy. 18-19 by 14 mm.

Nest. An open eup-shaped structure, made of grasses and bound well together with cobwebs, etc., and lined with wool or hair. Dimensions over all, varies from 2 to nearly 3 inches across by $2\frac{1}{2}$ to 3 inches in depth. Placed in bushes and trees in a variety of situations, sometimes high up, at other times within hand's reach of the ground.

Breeding-months. Usually June to December, even on to April.

AGAIN Gould described this species before he went to Australia and afterwards wrote: "This species, which is rarely met with in New South Wales, is very abundant in South Australia; I met with it even in the streets and gardens of Adelaide; and it doubtless enjoys a wide range over the interior of the country. From what I observed of its habits it appears to differ from the generality of Honey-eaters in the partiality it evinces for the ground; for although most of its time is spent among the leafy branches of the gums and wattles, it is often to be seen hopping about under the trees in search of insects and seeds, which with the pollen of the flowers of the *Eucalypti* and *Acaciæ* constitute its food."

Captain S. A. White has written me: "This bird has a very wide range and does vary much in coloration. Some of the darkest birds I have seen have been taken round Adelaide and on the Adelaide plains; another form is

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found on the River Murray and a still lighter one in the Flinders Range ; the lightest of all is a common bird in the interior and is what I call *leilavalensis*. All through the centre of Australia wherever there are red gums I have found this form. The darker form is found in numbers all through the Mt. Lofty Ranges and out upon the plains. They have a great habit of giving alarm notes at any unusual occurrence. Many mammals and other birds are warned of the approach of man or other danger such as a hawk, etc., and consequently they are no friends of the sportsman. They will mob owls or other large birds, a party up to a dozen surrounding the bird and making a great noise. They have many calls, one of a single note when feeding is a sharp shrill one ; the warning note is a loud and sustained trill which is echoed on from one party to another. Their food consists chiefly of insect life, but they will also gather honey from the gum-blossoms or other flowers, including those of garden plants. They nest from August to November or later, rearing two or sometimes even three broods in the season. The nest is a cup-shaped structure suspended in overhanging foliage and is composed of dry grass and cobwebs lined with rootlets or more often horsehair."

Mr. J. W. Mellor has also written : "The White-plumed Honey-eater is the commonest Honey-eater in South Australia, being very widely dispersed throughout the country ; and on the Adelaide Plains no other bird is so numerous, every schoolboy knowing the 'Greenie' as it is familiarly called, and even in the streets of Adelaide I have noted this bird hopping about in the trees in search of food, which consists to a large extent of insect life such as flies, gnats and small beetles, and I have often seen them eating the green aphides off the cabbages and rose bushes in my garden at the Reedbeds, where they are very numerous. They like the open big gum country on the alluvial flats along the rivers, and the River Torrens gives them every scope in this respect. I have also seen them plentifully along the winding course of the River Murray where trees and bushes give ample cover for them to breed and live. They are intensely inquisitive birds and make a great fuss if anything strange is espied ; they twitter and twitter very loudly with a harsh note and this generally calls several more birds to the spot to see what is the cause of the alarm. Timid birds take this twitter as a note of warning and are on the alert, and I have even seen rabbits take heed to the warning note of the 'Greenie' and bob down their burrows. The breeding-season extends over a considerable period, starting about August and ending as winter approaches, about April."

Mr. Thos. P. Austin writes from Cobbora, New South Wales : "A very common species here in suitable situations, but it is seldom to be met with far away from the vicinity of water, such as along river banks lined with oaks

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and red gums. It is also nearly always to be met with about dwellings where there is a garden or an orchard. In Victoria, about Melbourne and Geelong, it is one of the commonest birds, so it seems strange it is not found near the coast about Sydney; or, I believe, in any coastal part of New South Wales. When feeding and undisturbed it usually utters only a single note, but let an Owl or a Hawk appear, it is the first bird to give a warning of danger, when it utters very different notes, a succession of notes rapidly poured forth, and several of the birds will soon appear within a few feet of the intruder, all joining in with their warning babble. Here each year several pairs breed in my garden, even in the climbing roses on the verandah."

D'Ombraïn has recorded an instance of this species acting as a bee killer: "Mr. W. McLellan, of this town (Casterton, Vic.), has some tree-lucerne plants and just now they are in full bloom. Noticing a large number of dead bees on the ground, he examined them and found their bodies crushed. There were dozens of them. Very soon a solution of the cause of their death was arrived at, for he watched the 'Greenies' or White-plumed Honey-eaters (*P. penicillata*) snap every bee that came to the blossoms. The birds simply gave the bees a crunch or two and dropped them."

Another interesting note by Dr. Cleland may be here quoted: "The presence of a bird of prey in the neighbourhood of Honey-eaters of this species is at once notified, as in the case of the Miner (*Manorhina garrula*), by the loud alarm notes they utter. In September, 1905, I found them at fault through a mistake. A great chattering and screeching of 'Greenies' was heard, and on going to ascertain the cause found some dozen of them, much excited, flying down on to a low overhanging branch and back again, screaming and fluttering. On the ground just below was the wing of a brown bird, lying flat, which somehow to our eyes suggested a coiled snake or lizard. We believe that the Honey-eaters also supposed it to be of this nature, and were making efforts in their own way to drive it off. Has anyone noticed their behaviour, or that of Miners, towards snakes? Is it possible that, in some of the supposed instances where snakes have 'charmed' birds towards them, the real explanation is that the birds have been trying to drive the intruder off and at last have unintentionally approached too near the enemy and so perished?"

Dr. Cleland has written me: "Sometimes, especially before daybreak on hot mornings, they utter a powerful note, not unlike that of a Goldfinch, but shorter. On summer mornings they are often seen rising up in the air by steps, singing another pretty song-note; then suddenly the song ceases and they swoop into their tree. On May 18th, 1895, I saw a pair of young being fed and protected by parents, feathers still fluffy, hardly any tail, and evinced no fear on having missiles thrown at them."

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Mr. F. E. Howe wrote from Victoria: "Is not a common bird in this district and is more often met with in the open country."

Mr. L. G. Chandler also sent me: "This is a very common form in the open timbered country, and even in the Melbourne Botanical Gardens they are to be seen in dozens. By country folk and schoolboys they are known generally as 'greenies.' Like most Honey-eaters they consume a considerable number of scale and other insects. I have watched them, while feeding on nectar from the gum blossoms, repeatedly fly out to secure a passing insect and return again to the sweets. They are very dexterous at catching an insect that seeks to elude capture by falling to the ground. At times they fail to achieve their purpose, but in most cases the insect is caught even by the bird turning somersaults in its pursuit. All through the day while feeding they frequently give sharp clear calls, besides the ordinary 'chip, chip' notes that are kept up incessantly at the least alarm. The notes vary considerably, but the general call is 'chee-ak-wita wit-eek'; occasionally a call is given sounding like 'Chu-bit-eek a-wit-eek wit-eek,' while again the 'Chu-bit-eek' may be given separately. These are the notes usually heard but there are several others. A peculiar habit of this Honey-eater is to rise from a tree and ascend into the air somewhat similar to a Lark, at the same time calling quickly 'chibery-chu chibery-chu' several times. I think they sometimes have a different call when doing this, but recently I have not been able to confirm this. Having attained a certain elevation they suddenly dart into the tree or scrub again. Sometimes they simply fly from one tree to another. When disturbed a number of them will fly to a bare limb and keep up an incessant din of notes sounding sometimes like 'chip-chip,' and often like 'chep-chep.' If the observer remains quiet they slowly cease their noise and disperse. In the neighbourhood of houses this peculiar trait is not often seen, but in the bush when disturbed by shooting they are curious to watch. They are very fond of bathing in winter as well as during the summer months."

In connection with his survey of the Birds of the Pilliga Scrub, New South Wales, Cleland wrote: "Forty-six birds counted on the trip, uniformly distributed throughout the journey, but especially found in tall eucalypts near water-courses. The estimated minimum population of 3,036 is probably considerably too low, as many birds were probably not observed in the leafy trees. A specimen shot had the bill black, the iris very dark brown, the pharynx and palate orange, and the legs greyish-brown. The liver was pale, as is so frequently the case in the Honey-eaters, being perhaps attributable to so much sugary food, though this particular species must feed chiefly on insects rather than nectar. No entozoa detected."

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Captain S. A. White has recorded of the Centralian bird : " This was an extremely common bird, and we collected it from around Oodnadatta, and then all through our journey. It partakes much of *P. pencillata* in habits and note, and like this bird is very pugnacious, attacking every and any bird that should come in its way, from a Tit to a Wedge-tailed Eagle. They are quite annoying when one is trying to stalk some other bird, for they will follow up, calling loudly their note of alarm. The nest is much smaller and shallower than *P. pencillata*."

Mr. Tom Carter, after whom this form was named, has written ; " The North-western White-plumed Honey-Eater (*P. carteri* (*penicillata*)) occurs in countless numbers in the white gum trees and other timber and scrub about the bed of the Gascoyne River and its tributaries, particularly in the neighbourhood of fresh water pools, where, in hot weather, these birds fairly swarm. From ten to twenty of them may be seen in a row drinking on the edge of a pool. Like *P. ornata*, these birds are very partial to feeding in white gum trees, and are met with in all creeks, rivers, and pools where these trees grow, from the North-west Cape to about the Irwin River in the south. They were noted as common in white gum trees at water troughs in the centre of the town of Mingenew (Irwin R.) in 1904. When pools dry up in bad seasons, the birds to a great extent move to where there is water. In habits they are very lively and inquisitive, and continually utter a pleasing liquid warble from earliest dawn until dark. The first authenticated eggs were found by me July 14th, 1899, on my Cardabia Creek Station, about 60 miles S.E. of Pt. Cloates. The nests are usually built in the scrub in the close vicinity of water. A species of bush (*Acacia* ?) with long, sharp spikes is much used for nesting sites, also a variety of large salt-bush. The nests are neatly made of fine grass and roots, with some vegetable cotton (!) and sheeps' wool, and are generally from three to five feet above the ground. Clutch of eggs two. The breeding-season is very regularly in mid-July, if the usual winter rains have fallen. July 11th, 1899. Five nests, three with two eggs each, one with young, one incomplete. July 20th, 1900. Several nests with two eggs or small young. Aug. 20th, 1901. 2 eggs incubated. Sept. 18th, 1911. Many fledged young near Carnarvon."

Mr. J. P. Rogers wrote from North-west Australia : " On Jegurra Creek, at the old Roebuck Station, forty miles from the Fitzroy, many of these birds were seen. None were seen at Mungi, but six miles to the north-west I saw several.

' On my return I watched this bird carefully and found it numerous until I got within thirty miles of the Fitzroy. After leaving this point I saw very few, and at ten miles from the Fitzroy none were to be seen, although I

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made a careful search for it. I have only seen this species at one point on the Fitzroy, *i.e.*, on the Kala Yeeda plains, which are on the south side and at the most southerly point of the river."

Dr. Burton Cleland has sent me a note : "Aug.-Oct. 1907. A very common Honey-eater amongst the eucalypts and tea-tree along the Strelley and Shaw Rivers. It resembles very closely *P. penicillata*, but is of a lighter yellow. In nearly all the specimens seen, a very distinct, blackish, pre-auricular tuft of feathers. In habits it is almost identical with *P. penicillata*, with the same way of flying and dodging amongst the trees, the same aggressiveness in attacking other birds such as *Grallina* and *Rhipidura*. In this way, by the chattering of a number of these Honey-eaters, I was attracted to an Owl hidden in the leaves of a tree. The notes of these birds are identical with those of *P. penicillata*, from the usual one to an occasional clear liquid whistle. Occasionally, like that bird, a bird will be seen to mount into the air by a series of ladder-like rises, meanwhile uttering a peculiar liquid note and then suddenly diving down amongst the bushes. Middle of Aug. 1907. Nest with fledged young. Sept. 23rd, 1907. Nest with two fresh eggs."

From the Pilbarra Goldfield, Whitlock has recorded "*Ptilotis carteri*. Native name 'Tūi-dee'. This was the commonest Honey-eater of the whole district, but I never found it far from water. It is one of the most lively and vivacious of the Honey-eaters, and its song is incessant. I had one favourite flying camp on the upper Coogan, which I called my 'cajaput camp,' from its being in a thicket of the latter trees. Here was a long, narrow pool of pure, delicious water, and here the Carter Honey-eater made its home. It was the first bird to call in the early morning and one of the last to retire to roost. The whole day long, except on particularly hot days, it was incessantly in motion. Usually in pairs, but very often parties of six or eight would meet on a small branch, and then the shrill whistling and chattering becomes a veritable babel of sound. It is a pugnacious species, and I have seen it fly at the heads of Doves, Magpie Larks, and the equally noisy Redbreasted Babblers. I found nine or ten nests of this beautiful Honey-eater. The favourite situation was in the mazes of a small-leaved climbing plant, each clump of which had to be examined to be successful. They were the usual neat but fragile structures of fine strips of cajaput bark, down, and spiders' webs. The eggs are large, white in ground-colour, sparingly spotted with rust-red. As a rule the spots are round, but occasionally dashes take the place of spots. The shells are very fragile, and it is a hopeless task blowing highly incubated eggs, as I found to my sorrow. In all but one instance two were the full complement of eggs. In this instance there were three, but the third egg presented distinctions from the other two."

WHITE-PLUMED HONEY-EATER.

From the East Murchison, Whitlock added: "I hardly expected to meet with this species so far inland, but I even found a pair or two within a stone's throw of the main street in Wiluna. At Milly Pool it was common, and I found nests containing eggs and also young. I saw some evidence in the presence of immature birds with pale brown beaks of this species having bred during the summer rains. These immature birds were observed near Wiluna in July."

Macgillivray, under the name *Ptilotis leilava'ensis*, wrote: "Numerous throughout the Gulf country in eucalypts and tea-tree. One nest was found containing eggs on the 18th March. In habits they resemble closely *P. penicillata* of southern latitudes."

Cleland has stated that he met with it at Queenscliff, Kangaroo Island, but the record does not appear to have been confirmed by Captain S. A. White, Mr. J. W. Mellor, or others.

Gould named this species from the interior of New South Wales and then found it common in South Australia. It was not subdivided into races nor were such indicated when simultaneously in 1899 North described a form from the Leilavale Station, thirty miles south of Cloncurry in the Burke District, Central Queensland, as a distinct species with the name *Ptilotis leilavalensis*, and A. J. Campbell described specimens from North-west Cape, Mid-west Australia, as a new species, *Ptilotis carteri*.

Immediately these two forms were recognised as generally agreeing and by some were even synonymised. Thus Hall recorded a bird from Derby under the name *P. leilavalensis*, regarding *P. carteri* as synonymous; but Milligan pointed out a number of differences and even suggested that the mid-west bird might be a southern race of *P. flavescens*, and then from Yandanooka, about 260 miles north of Perth, wrote as follows: "*Ptilotis carteri* (Campbell). These birds were invariably found in the 'York gum' belts, both at Yandanooka and Ebano. In habit and disposition they are restless and pugnacious, chasing each other from tree to tree in noisy quarrel. They have a habit similar to that of *Ptilotis ornata* (which they resemble in their notes and general characteristics) of rising frequently into the air from the top of a tree, uttering a distinct note. We secured a series of some twelve skins, and in every one (except a fledgling) the black auricular line and yellow throat and chest striations . . . were always present and conspicuous. Lately I have had the opportunity of comparing the above with two skins of *Ptilotis leilavalensis* (North) from the Carpentaria district, kindly lent by Dr. W. McGillivray, and in neither of these skins do the black line and striations appear. The white plumes in the latter, also, are less strongly developed. I have therefore not the slightest hesitation in pronouncing the two species distinct. Fortunately, when I was making the comparison, Mr. Tom Carter, formerly of Point Cloates, was on a

THE BIRDS OF AUSTRALIA.

visit to Perth, and he, after making a critical examination of the skins of both species, expressed himself as entirely in accord with my pronouncement. Certainly the general pattern of the plumage of the two species is very similar, but the same remarks apply with equal force to *Ptilotis plumula*, which appears to be an inland representative of *Ptilotis carteri*. Convert the yellow plumes of *Ptilotis plumula* into white, and you have *P. carteri*. I cannot admit *P. penicillata* as being as near an ally to *P. carteri* or to *P. leilavalensis* as is either *P. plumula* or *P. flavescens*."

North had differentiated the Leilavale bird by the absence of the blackish line separating the silky-white ear-patch, and the olive-yellow head coloration, etc.

When I examined the material I possessed in 1912 for the preparation of my "Reference List" I was surprised to find the variation existent, and I also recognised that *P. carteri* and *P. leilavalensis* were simply subspecific forms of *P. penicillata*, notwithstanding Milligan's suggestion that *P. plumula* was a nearer ally. It will be noted that Cleland has noted the very close actual relationship of *P. carteri* with *P. penicillata*, and Macgillivray of *P. leilavalensis* with this species also.

I found that the species could be separated into eight subspecies, each of which showed as good separative characters from each other as did *P. leilavalensis* or *P. carteri*.

These were distinguished as

Ptilotis penicillata penicillata Gould.

Interior New South Wales.

Ptilotis penicillata mellori Mathews.

"Differs from *P. p. whitei* in its still darker coloration above and below. (Templestowe) Victoria."

Victoria.

Ptilotis penicillata whitei Mathews.

"Differs from *P. p. penicillata* in its darker coloration above and below. Murray Flats, South Australia."

South Australia.

Ptilotis penicillata rosinae Mathews.

"Differs from *P. p. penicillata* in lacking the dark line of feathers above the white ear-patch, and in being lighter above. Port Augusta, South Australia."

South Australia (Port Augusta).

Ptilotis penicillata leilavalensis North.

North Queensland.

Ptilotis penicillata carteri Campbell.

Mid-west Australia.

Ptilotis penicillata ladasi Mathews.

WHITE-PLUMED HONEY-EATER.

"Differs from *P. p. carteri* in its more pallid coloration above and below, less striping on the throat, and the head less yellow. East Murchison."

Mid-west Australia.

Ptilotis penicillata calconi Mathews.

"Differs from *P. p. carteri* in having less yellow on the throat, in its paler coloration, and in the white ear-patch being more noticeable. Mungi, North-west Australia."

Interior of North-west Australia.

Campbell observed: "A pair (♂ and ♀) from the Coongan are typical specimens of *P. carteri* and probably more than a subspecies." This was the only recent comment upon the above arrangement, which was admitted unchanged save for reference to the genus *Ptilotula* in my 1913 "List," until Ashby described *Ptilotis geraldtonensis*, writing: "It was exceedingly interesting to find this bird at Geraldton and Dongara, where it takes the place of *P. penicillata* in South Australia, with similar notes and habits. We expected *P. carteri*, but our specimens differ considerably from specimens in my collection of that bird, and although considerably larger and darker in colour than specimens of *P. flavescens* from Derby, the specimens collected are certainly nearer that species than to my representatives of *P. flava*, *P. carteri*, and *P. keartlandi*. I give the name *geraldtonensis*, that being the first locality in which I found it, although I afterwards found it even more numerous at Dongara. It prefers creek beds." He then gave a complete description and diagnosis of the "new species," and this caused so much interest that he reviewed the group after a hurried visit, and this review is remarkable that with the scant material available practically the arrangement adopted by me in 1912 was entirely confirmed.

The results Ashby published in detail and the main points I here note. Ashby recognised as one species the forms I amalgamated, with the addition of his *geraldtonensis*, but suggests two divisions, a "forest division" and a "desert division"; the "forest division" being diagnosed: "All the birds in this series are coloured in varying degrees with yellowish-green," while the "desert division" covers "All the birds in this series are coloured with yellow, instead of yellowish-green, and all show a wash of buff so characteristic of Desert Birds."

To the "forest division" he allots:

- (1) Victorian birds, with which he considers birds from Adelaide Hills are identical; these are the darkest birds.
- (2) New South Wales birds, Torr Downs on the River Darling and Broken Hill birds are generally paler.
- (3) From the Gorge, near Port Germain, South Australia, are still pale.

THE BIRDS OF AUSTRALIA.

- (4) Geraldton birds are nearest the preceding, but are brighter and more yellow streaked on the throat; this is the yellowest form of the Forest series.

Note (by Ashby). "Mathews subsp. *mellori* and *whitei* are No. 1. Typical *M. penicillata* is No. 2. Mathews subsp. *rosinæ* is probably No. 3. My own *geraldtonensis* is No. 4."

(Note by me: "Ashby had not examined specimens of *whitei* in this connection, and Captain S. A. White notes the Murray Flat birds differ from the Victorian form, as will, I am sure, be admitted by Ashby when he re-examines these.")

To the "desert division" Ashby refers:—

- (1) East Murchison and Lake Way birds which he does not separate from *P. carteri* (two females only examined).
- (2) Carnarvon, Point Cloates, and Upper Coongan birds agree with one from Roebourne and are typical *carteri*.
- (3) Oodnadatta, River Diamantina, Mt. Benstead, and Flinders Rivers birds are all smaller birds than *P. carteri*, but are placed in this section; the black of the ear-coverts in this "subspecies" are grey.

Note (by Ashby). "My No. 1 will be Mathew's *ladasi*. No. 2 would include *carteri* Campbell and *calconi* Mathews. No. 3 will include all the variants of North's *leilavalensis*."

(Note by me: Ashby has never seen *calconi* nor birds from any locality near, so that he cannot include it with *carteri*, from which it is easily separable.)

The above review by Ashby is one of the best class, as it is synthetical as well as analytical, and must be productive of good results.

GENUS—BROADBENTIA.

BROADBENTIA Mathews, Austral Avian Record,

Vol. II., pts. 2-3, p. 60., Oct. 23rd, 1913.

Type (by original designation) *Ptilotis flava addenda* Mathews.

I DIAGNOSED this group thus: "Differs from *Ptilotula* Mathews in its much longer bill, stronger feet and longer wing, though as short a tail; from *Nesoptilotis* Mathews in its shorter tail, though the wing is of the same length, and its much longer bill."

The bill is long and stout, longer than the head, nearly straight, the culmen gently arched, the nasal groove long, though less than half the length of the bill.

The wing has the third, fourth, fifth and sixth primaries subequal and longest, the second primary about equal to the seventh, the first short primary about half the length of the second.

The legs are short and stout, the front of the tarsus scutellate, the hind view bilaminate; the feet are small and stout, the hind-toe stout but a little shorter than the middle toe; the inner and outer toes subequal, with claws a little longer than middle toe alone; claws sharp.

Order PASSERIFORMES.

Family MELITHREPTIDÆ.

No. 683.

BROADBENTIA FLAVA.

YELLOW HONEY-EATER.

(PLATE 541.)

PTILOIS FLAVA Gould, Proc. Zool. Soc. (Lond.), 1842, p. 136, Feb. 1843 : North Coast Australia =Cape York.

Ptilois flava Gould, Proc. Zool. Soc. (Lond.), 1842, p. 136, 1843 ; *id.*, Birds Austr., pt. XXI. (Vol. IV., pl. 42), Dec. 1st, 1845 ; *id.*, Handb. Birds Austr., Vol. I., p. 518, 1865 ; Ramsay, Proc. Zool. Soc. (Lond.), 1875, p. 596, 1876 ; *id.*, Proc. Linn. Soc. N.S.W., Vol. II., p. 189, 1878 ; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 246, 1884 ; Ramsay, Tab. List Austr. Birds, p. 13, 1888 ; Hall, Key Birds Austr., p. 43, 1899 ; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 408, 1901 ; North, Austr. Mus. Spec. Cat., No. I, Vol. II., p. 127, 1907 ; Mathews, Handl. Birds Austral., p. 97, 1908 ; Broadbent, Emu, Vol. X., p. 238, 1910 ; Macgillivray, *ib.*, Vol. XIII., p. 179, 1914 ; H. L. White, *ib.*, Vol. XVI., p. 228, 1917 ; Campbell and Barnard, *ib.*, Vol. XVII., p. 34, 1917 ; Macgillivray, *ib.*, p. 206, 1918.

Ptilois flava flava Mathews, Nov. Zool., Vol. XVIII., p. 411, Jan. 31st, 1912.

Ptilois flava addenda Mathews, *ib.*, p. 412 : Inkerman, Queensland.

Broadbentia flava flava Mathews, List Birds Austr., p. 282, 1913.

Broadbentia flava addenda Mathews, *ib.*

DISTRIBUTION. North and Mid-Queensland.

Adult male. Whole of the upper-surface of the body yellowish-olive, brightest on the rump and upper tail-coverts ; tail-feathers dark olive-green, shafts dark brown ; primaries and outermost secondaries ash-brown, with the outer webs yellowish-olive and broadly margined on the inner web with lemon-yellow ; innermost secondaries yellowish-olive, like the back, with dark brown shaft-streaks ; lores and ear-coverts olivo-green, feathers behind the eye golden-yellow ; entire under-surface of the body golden-yellow ; under wing-coverts and axillaries bright golden-yellow. Eyes brown, bill black, legs and tarsus greenish-grey. Total length 160 mm. ; culmen 15, wing 88, tail 72, tarsus 21. Figured. Collected near Cairns, North Queensland, in July, 1911, and is the type of *B. f. assimilis*.

Adult female. Similar to the adult male.

Eggs. Two eggs usually form the clutch. A clutch of two eggs taken at Coen, Cape York Peninsula, North Queensland, on the 19th of November, 1921, is of a white colour, possessing a very pale pinkish tinge. Well spotted and blotched with pale to dark reddish-brown and purplish-grey, the markings becoming very crowded at the



H. Gronvold, del

Witherby & Co

STOMIOPERA UNICOLOR
(WHITE-GAPED HONEY-EATER.)

BROADBENTIA FLAVA
(YELLOW HONEY-EATER.)

НЕТОВА, МОС. У. М. РОВЕНЕ

YELLOW HONEY-EATER.

larger ends. Swollen ovals in shape. Surface of shell smooth and slightly glossy. 21 by 14 mm.

Nest. A cup-shaped structure—comparatively shallow; composed of strips of bark and grasses; and generally placed in a bush or small tree, sometimes within five feet of the ground.

Breeding-months. August to November.

GOULD had only one specimen, procured by one of the officers of H.M.S. "Beagle" while employed on the north coast, and gave no notes concerning its habits.

Ramsay afterwards wrote: "A very beautiful species, and perhaps the most common bird about Cardwell; frequently seen clinging to the flowers of the bananas and plantains in cultivation round the houses; when among the blossoms of the *Acaciæ* they are scarcely discernible, so closely does their yellow plumage match the tint of the blossoms."

Macgillivray's notes read: "First noted at the Jardine River, Cape York, where they were common in the open forest and along the river, and where their bold, loud, and clear whistling note was constantly heard. ♂, iris greyish-brown; upper mandible brownish-black, lower mandible dark brown; legs yellowish-olive. Stomach contents, honey and insects."

"Yellow Honey-Eaters were not common, and were only occasional in the open forest on the Claudie. They were common on the Archer."

McLennan on his King River, Northern Territory, simply wrote:

"Pera Head, 4/7/15. A few birds noted."

Campbell and Barnard, in the Rockingham Bay account, were almost as laconic. "The *flava*, with its merry 'Whee-a, whee-a,' notes is a favourite. It is found throughout scrubs, and always frequents the orchards and gardens when flowers are out. Its pretty nest, composed of brownish shreds of bark, was also taken and photographed."

In my "Reference List," 1912, I described

Ptilotis flava addenda.

"Differs from *P. f. flava* in its larger size and greener tint above and below. Inkerman, Queensland."

Mid-Queensland.

and these were admitted in my 1913 "List" with transference to the genus *Broadbentia*.

GENUS—STOMIOPERA.

STOMIOPERA, Reichenbach, Handb. spec. Ornith., Abth. II.
(Handb. Meropinæ), Vol. I., p. 109 (Icones Cont.,
No. IX., March 1st, 1852). Type (by subsequent
designation, Gray, 1855, p. 24) *P. unicolor* Gould.

Also spelt—

Stomiopara Bonaparte, Comptes Rendus Acad. Sci. Paris, Vol. XXXVIII., p. 263, 1854.
Stomioptera Gray, Cat. Gen. Subgen. Birds, p. 24, 1855.

LARGE Honey-Eaters with long stout bills, long wings, long tails and medium legs and feet.

The bill is long and stout, longer than the head, nearly straight, the culmen gently arched and generally like that of *Microptilotis*, but much larger and heavier; there is a swollen fleshy gape like in that genus; the interramal space in the lower mandible is long, nearly half the length of the under mandible; while though the nasal groove is long, it is less than half the length of the culmen, the linear nostrils being strongly operculate.

The wing has the first primary short, about half the length of the second, which is shorter than the ninth primary and the secondaries; the third, fourth, fifth, sixth and seventh primaries are subequal and longest, the seventh sometimes a little shorter.

The tail is long and square.

The legs are comparatively long, the front aspect scutellate, but the scutes tend to fusion and show an indistinct booting; the hind part, as usual in the family, bilaminate; the toes are medium, the inner and outer toes subequal in length, the middle toe longer but without claw not longer than inner toe with claw; the hind-toe and claw a little stouter and longer than the middle toe and claw.

Order PASSERIFORMES.

No. 684.

Family MELITHREPTIDÆ.

STOMIOPERA UNICOLOR.

WHITE-GAPED HONEY-EATER.

(PLATE 541.)

PTILODIS UNICOLOR Gould, Proc. Zool. Soc. (Lond.), 1842, p. 136, 1843 : Port Essington, Northern Territory.

Ptilotis unicolor Gould, Proc. Zool. Soc. (Lond.), 1842, p. 136, 1843; *id.*, Birds Austr., pt. XVI. (Vol. IV., pl. 46), March 1st, 1846; Gadow, Cat. Birds Brit. Mus., Vol. IX., p. 249, 1884; Hall, Key Birds Austr., p. 43, 1899; Campbell, Nests and Eggs Austr. Birds, Vol. I., p. 410, 1901; Hall, Emu, Vol. I., p. 100, 1902 (N.W.A.); Le Souëf, *ib.*, Vol. II., p. 92, 1902 (N.T.); North, Austr. Mus. Spec. Cat., No. 1, Vol. II., p. 151, 1907; Mathews, Handl. Birds Austral., p. 97, 1908; *id.*, Emu, Vol. IX., p. 63, 1909 (N.W.A.); Hill, *ib.*, Vol. X., p. 287, 1911 (N.W.A.); *id.*, *ib.*, Vol. XII., p. 260, 1913 (N.T.); Macgillivray, *ib.*, Vol. XIII., p. 179, 1914 (Q.); Barnard, *ib.*, Vol. XIV., p. 49, 1914 (N.T.); H. L. White, *ib.*, Vol. XVI., p. 228, 1917 (N.T.); Campbell, *ib.*, Vol. XVIII., p. 186, 1917 (N.T.).

Meliphaga unicolor Gray, Genera Birds, Vol. I., p. 122, 1846.

Stomiopera unicolor Reichenbach, Handb. Spec. Ornith., Abth. II., Vol. I. (Handb. Meropinae), p. 109, 1852; Gould, Handb. Birds Austr., Vol. I., p. 523, 1865; Ramsay, Proc. Linn. Soc. N.S.W., Vol. II., p. 189, 1878; *id.*, *ib.*, Ser. 2, Vol. I., p. 1092, 1887; *id.*, *ib.*, Ser. 2, Vol. II., p. 169, 1887; *id.*, Tab. List Austr. Birds, p. 13, 1888.

Stomiopera incompta Reichenbach, Handb. Spec. Ornith., Abth. II., Vol. I. (Handb. Meropinae), p. 109, 1852, MS. as synonym of *S. unicolor* Gould.

Ptilotis unicolor unicolor Mathews, Nov. Zool., Vol. XVIII., p. 413, Jan. 31st, 1912.

Ptilotis unicolor yarra Mathews, *ib.* : Inkerman, Queensland.

Ptilotis unicolor darbiski Mathews, *ib.* : Fitzroy River, North-west Australia.

Ptilotis unicolor brenda Mathews, Austral Avian Record, Vol. I., pt. 2, p. 50, Apl. 2nd, 1912 : Melville Island, Northern Territory.

Stomiopera unicolor unicolor Mathews, List Birds Austr., p. 282, 1913.

Stomiopera unicolor brenda Mathews, *ib.*

Stomiopera unicolor darbiski Mathews, *ib.* ; *id.*, South Austr. Orn., Vol. III., p. 225, 1918.

Stomiopera unicolor yarra Mathews, List Birds Austr., p. 282, 1913.

DISTRIBUTION. Northern Tropical Australia from Fitzroy River in the north-west to Inkerman in Queensland; Melville Island.

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Adult male. Upper-parts of the body smoke-brown, slightly washed with olive; tail-feathers uniform brownish-ash, slightly fringed on the outer web with dark olive; primaries brownish-ash slightly fringed on the outer web with grey; secondaries brownish-ash, with the outer web slightly fringed with olive and the inner web margined with greyish-white; under-surface of the body light smoky-grey; middle of the abdomen and under tail-coverts whitish-grey; thighs washed with rufous; under wing-coverts and axillaries silky-white. Eyes greyish-brown, feet and tarsi leaden-brown, bill black with the corners of the mouth creamy-white. Total length 207 mm.; culmen 20, wing 103, tail 86, tarsus 27. Figured. Collected on the Fitzroy River, North-west Australia, on the 7th of June, 1911, and is the type of *P. w. darbiski*.

Adult female similar to the adult male.

Eggs. Two eggs usually form the clutch. A clutch of two eggs taken at the Katherine River, Northern Territory, on the 6th of January, 1899, is of a delicate pinkish-white ground-colour. Well blotched and spotted with reddish-brown, chestnut, and purplish markings, which are very numerous at the larger ends. Ovals in shape. Surface of shell smooth and slightly glossy. 23-24 by 15-16 mm.

Nest. An open cup-shaped structure, composed of thin strips of bark, dried grasses, etc., and lined with thin grasses and fine material. Dimensions over all about 3½ inches across by 2½ to nearly 3 in depth. Usually placed in a bushy tree.

Breeding-months. August to January.

GOULD'S observations on this peculiar species read: "This bird, which differs from the true *Ptilotes* in some parts of its structure, in the uniform colouring of its plumage, and in its habits and manners, is one of the many species that rewarded Gilbert's researches at Port Essington; where he states it was seldom met with in the immediate vicinity of the harbour, but that it gradually increased in number as he approached the narrow neck of the peninsula and the mainland about Mountnorris Bay."

Ramsay, recording it from Derby, North-west Australia, wrote: "This species is not rare at Cape York, and is also found near Normantown in the Gulf of Carpentaria district. . . . This bird was originally obtained at Port Essington; it has a wide range extending over the whole of the north and north-western portions of the continent."

Mr. J. P. Rogers wrote me: "This species was not seen either at Mungi or Marngle Creek. It is fairly numerous on the Fitzroy, where it frequents the dense growth on the bank of the river. It is usually found near water." From Melville Island Rogers wrote: "Cooper's Camp. Nov. 20th, 1911. This species is sparingly distributed in the forest country. On the heavily timbered creeks it is rather numerous. These creeks usually have a dense growth of creepers, etc., covering the big trees, and in places the trees are covered with a cane not unlike rattan. Near these dense growths are the favoured spots where the birds are most numerous. Jan. 14th, 1912. A few were seen in the jungles on the north side of the island. Jan. 30th, 1912. Cooper's Camp.

WHITE-GAPED HONEY-EATER.

To date I can see no young birds nor signs of their pairing. They are not numerous, but some are seen every day."

Hall had recorded Rogers' note from Derby, North-west Australia: "My experience with this bird is to find it never away from the thick scrub along the Fitzroy River. It is very quiet, so much so that I have never heard its note. It is very fond of the small fruit of the native fig (6/12/00). On 20th September I saw the young of this species. It is very unusual to see the young of Honey-eaters at this time of the year, as it is usual for them to breed in the heavy tropical rains. Where I saw these birds a heavy storm had recently occurred, and possibly that accounts for the diversion."

Hill simply added: "A rather uncommon species in all localities from Parry Harbour to the Drysdale River, Kimberley, N.W.A." and from Borroloola, Northern Territory, noted: "Fairly plentiful. Found in sheltered localities near water."

Macgillivray has recorded: "These fine, large Honey-eaters were first met with on the Leichhardt River beyond Caloola Station, thence onward to Burketown they became more numerous. They are very noisy birds with a loud whistling note, and were never met with away from the tea-tree which borders the rivers. ♂, taken on 12th June, irides greyish-brown, bill black, naked patch of skin at base of upper mandible bright sulphur-yellow, legs dark slate. Stomach contained skins and seeds of the wild grape, portions of mistletoe flowers, and ladybird beetles. The female resembled the male in these particulars."

Barnard wrote from Borroloola, Northern Territory: "Common in the brush along the river and near sandstone bluffs."

McLennan's notes on his King River trip, recorded by H. L. White, read: "MacArthur River, 7/8/15. Fairly plentiful along river above limit of mangroves. Liverpool River, 21/9/15. A few noted. King River. Fairly plentiful about river flats and in small patches of scrub at springs. Occasionally seen in the mangroves. Roper River. Noted along the river beyond the limit of mangroves. Stomach, skins and seeds of berries and fruit, remains of beetles and other insects."

Campbell wrote regarding this collection: "One ♂, wing 98 mm., 3 ♀♀, wing 87-90 mm. This unique bird, Gould records, 'is one of the many species that rewarded Gilbert's researches at Port Essington.' It is well named specifically, being of a uniform olive-brown appearance. It is not appreciably different from Gulf (Carpentaria) birds, or those from the north-west, which latter, however, may be a trifle (tint) lighter. One specimen, in the 'H. L. White Collection,' from Cairns has a greenish hue—perhaps a seasonal or age-stage of plumage. If not, Mathews's subspecies (*yarra*) is a good race."

THE BIRDS OF AUSTRALIA.

When I drew up my "Reference List" in 1912 I arranged :

Ptilotis unicolor unicolor Gould.

Northern Territory.

Ptilotis unicolor yarra Mathews.

"Differs from *P. u. unicolor* in its much greener coloration above.
Inkerman, Queensland."

Queensland.

Ptilotis unicolor darbiski Mathews.

"Differs from *P. u. unicolor* in its paler coloration above and below,
especially noticeable on the abdomen. Fitzroy River, North-west Australia."

North-west Australia.

I later added

Ptilotis unicolor brenda.

"Differs from *P. u. unicolor* in its lighter coloration and larger size. Melville
Island."

Melville Island, Northern Territory.

I accepted these four in my 1913 "List," referring them to the genus
Stomiopera proposed sixty years previously.

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